

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

GLEANINGS IN

THE BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

Published by THE A. H. ROOT CO.
\$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVII.

MAR. 1, 1899.

No. 5.



ARTHUR HANSEN, p. 132, is the first man I've seen making end-bars the same as mine, $1\frac{1}{8}$ inches wide. Now, friend Hansen, why didn't you make bottom-bars the same width?

GETTING COMBS in extracting-super built out with cells too deep for queens, as mentioned by Arthur Hansen, p. 132, is an old trick, and I think successful, but it is objected that it gives less comb surface, and ripening is slower.

I AGREE with Doolittle and Stenog, p. 123. If all would breed and select with the care and good judgment of Doolittle, it would be better than importing. With things as they are, there would be a lowering of average if there should be no more importations.

TO EMPHASIZE a statement of R. C. Aikin, p. 128, I may say that not only will my bees not build down to the bottom-bar, but if foundation comes within $\frac{1}{8}$ or $\frac{1}{2}$ inch of the bottom-bar, and often even when it touches the bottom-bar, they'll gnaw it away so as to leave a $\frac{1}{4}$ -inch space.

YOU'VE STRUCK IT. I mean those springs on p. 141. [Yes, so practical and extensive a bee-keeper as M. H. Mendleson, of California, used and tested these springs very thoroughly last season, and I understand he was delighted with them. Mendleson, you know, is one of the most extensive bee-keepers in California.—Ed.]

MR. EDITOR, your medical doctrine, p. 122, is all right. When grip began to be troublesome this winter I redoubled my carefulness as to diet, especially as to overeating, and the grip has been able to do no more with me yet than to make me feel like using the lounge more than usual. But I mustn't brag, for there's no telling what may yet happen.

FIFTY COLONIES in an apiary are more profitable than 100, says Doolittle, p. 138, if each colony uses 60 lbs. for its own support and the field furnishes 11,000 lbs. honey. Correct, if each colony will store 160 lbs. surplus,

and if the field furnishes only 11,000 lbs. But if each colony can store only 100 lbs. surplus, and if the field furnishes 16,000 lbs., then not a colony less than 100 should be kept.

FRIEND AIKIN, you say, p. 128, that a section or brood-frame a half deeper than wide will be finished quicker than if turned the other way. I admit the section, but dispute the brood-frame. It would be so if the comb was started at one point and all built from that center. But the comb is started in three or four parts, each part being a half deeper than wide.

C. DAVENPORT, p. 133, thinks it isn't patriotism to receive honey from Cuba. Friend C., if patriotism makes us care for no country but our own, then there's something higher than patriotism. If the greatest good to the greatest number is advanced by letting in Cuban honey, then let it in, even if it drives us all out of the business. But may be enough will go to Cuba to eat all its honey at the low prices.

BICYCLES with their gear-cases and other improvements get quite a send-off in last GLEANINGS. But that one of Rambler's, p. 136, beats 'em all, for it breathes "to the full the balsamic fragrance." That must be some new arrangement for inflating its own tires. [A gear-case on a bicycle, to use another comparison, is just about as necessary, in my judgment, as a smoker to open a bee-hive. Either can be dispensed with, but not profitably.—Ed.]

DYSENTERY, according to reply to F. A. K., p. 137, seems to be a matter of food. But don't bees sometimes have dysentery with wholesome stores? In any case, if my bees had dysentery in cellar, I'd run up the temperature for a few hours to 60 or 80 degrees. I don't know, but I think it helps. [Yes, bees do die of dysentery, even with wholesome food. Some of our colonies last fall, fed exclusively on sugar syrup, are showing, as a result of the extremely cold weather we have been having, dysentery to quite a serious extent. I always supposed that disease was caused either by too long confinement, without an opportunity to evacuate the bowels, or by long severe cold causing the bees to gorge themselves more than was for

their good, in order to keep up the necessary animal heat.—ED.]

D. W. HEISE gives it in *Canadian Bee Journal* as an incontrovertible fact that "the first and primary cause of bees constructing drone comb is for the reception of honey." I'm inclined to controvert that incontrovertible fact, at least so far as to say it isn't always true. In a super of sections filled with worker foundation, I've known the bees to start drone comb where the foundation was lacking in one of the sections, and that drone comb was left with shallow cells and not a drop of honey in it while the rest of the section and all the sections around it were filled with honey. Now if "the first and primary" object of that drone comb was honey, why didn't the bees put honey in it?

I WAS GETTING READY to report that, by having so many colonies (289) in one cellar I didn't need any fire, when a cold spell came, and for 18 days it varied from zero to 25° below. The thermometer in cellar went down to 41°, 39°, and finally 36°. I couldn't stand it any longer—made a hot fire, running up to 60° the heat on hives nearest the stove. Would you believe it? within two days the weather was so warm I had to keep the cellar door open all night. [This sudden change for the warmer was the only thing that saved the bees wintered on their summer stands. Reports, as you will see, show this sudden change to warm weather will prevent the bees from being as much injured as we at first expected.—ED.]

SIXTY HIVES AN HOUR can be opened when using the entrance-closer mentioned on p. 124. With the one I use they can be opened in less than one-fourth that time. [And you might have added that your entrance-closer costs only about a tenth as much. Our friend Mr. Kreutzinger is a very nice man and a good bee-keeper; but I can not say that I like his entrance closer. It is too much of a good thing. For the benefit of some of our readers who do not know what Dr. Miller's entrance-closer is, I would state that it is simply a strip about $\frac{5}{8} \times \frac{7}{8}$, and in length equal to the width of the hive entrance. On this is nailed a strip of wire cloth, folded to give it stiffness. Two taps of a hammer will secure these in position; and if they ever get lost, strayed, stolen, or stepped on, the loss is insignificant.—ED.]

"HIVES with Hoffman or self-spacing frames don't require to be handled like eggs," you say, p. 122, so you think they can be taken on a wheelbarrow, Mr. Editor. None of my hives or frames require handling like eggs. They stand hauling on a wagon or a wheelbarrow without any precaution. It's not the frames, it's the bees. When taken in the cellar I want them to be taken in without being waked up. Taking out is not so important; but even then I'd rather see no bee leave the hive until some time on the stand. [H. R. Boardman wheels all his colonies into his winter repositories on a hand-cart; but the wheels are of large diameter, and his yard is level. But even a wheelbarrow on a smooth path ought to be able to deliver the colony to the

cellar-opening, with scarcely a perceptible jar; but a wheelbarrow for you—well, that would not do, sure. Your apiary is on a hillside, and the ground from the hives to the cellar is somewhat uneven. I'll let you have your own way.—ED.]

TWO OR THREE have said that, in many cases, with the new arrangements the outside sections in a super were finished first. I'm anxious to believe that's true, but it seems so directly opposed to all rules of comb-building that I may be excused for asking whether there wasn't something wrong with the middle sections. It's easy to explain why central sections should be finished first; can any explanation be given why central sections should be finished first? [It is a fact that we have had a good many reports showing that the Pettit idea secures sections on the outside, as well filled as those on the inside; and this same idea was incorporated in all the plain-section supers except one put out by us last season. I do not remember that any one claimed that the outside surfaces would be *better* filled than the center. But assuming that you are right, the reason may be because the fence on the outside permits of a larger wall of live bees between the super side and face of honey than between two opposite faces of honey in the center of the super. The Pettit idea is based on the fact that good filling is due to plenty of animal heat; and if we put *more* animal heat on the outside faces of the sections, then the natural result would be that they would be filled sooner and perhaps better. If I have not properly set forth the Pettit theory I hope he will correct me.—ED.]

LOOK AT A SECTION and see how the finish is worked out even with the narrow part of the section top, but dubbed off when it comes to the wide part, says R. C. Aikin, p. 127. I've just examined a lot. The dubbing does not begin till after part of the wide part is past, making it appear that it isn't the wide part that makes the dubbing, but rather because it's near the corner. Moreover, at the middle of the side it's built out just as full as at the middle of the top, and the side is dubbed just the same when it gets near the corner, and surely there's no wide and narrow part to the side. The main question is, is there no dubbing in the corner of a plain section? [R. C. Aikin is partly right, and you are partly right. *Under like conditions the plain section will be filled no better than the old-style section.* I put this in italics because I have often been quoted as taking the opposite view. If plain sections are filled better at the corners, it is because the bees have passageways over the tops of the separators from one section to the other, the separator being dropped down $\frac{1}{4}$ inch from the top of the section. A one-piece section open clear across the top, and part way down the sides, is a far better bee-way section than the ordinary one sold on the market. Mr. C. A. Hatch, a very conservative bee-keeper, who had seen how well Mr. Danzenbaker's open-corner sections were filled, at Omaha, gave it as his candid opinion that these open corners were very important, and did much to secure better filling.—ED.]



HAVE a dear old neighbor
Who lives in Sleepy Lane;
He keeps some bees
Among the trees,
From which he gets no gain—
No one directs their labor.
He had a wise grandfather
Whose bee-lore downward ran
And lodged upon this grandson,
My friend, the Box-hive man.

The almanac he studies,
He knows about the moon—
Its every phase,
Its changing days,
And never plants too soon;
He waits until the flood is
Well past, called equinoctial;
He never yet began
A job on any Friday—
My friend, the Box-hive man.



He looks with veneration
Upon his few "bee-skeps;"
Down on his knees
He tells the bees
About his sad mishaps,
And seeks their consolation.
To sell 'em'd be unlucky—
For this tradition ran
According to the memory
Of this the Box-hive man.

When time arrives for swarming
(But not before July),
The children all,
If not too small
To know the reason why,
Are tasked with the informing
Of "pap" afield, by calling,
Or drumming a milk-can
To charm the bees, and hasten
Their sire, the Box-hive man.

Of course he takes no paper,
And never reads a book—
"They're all nonsense,
And much expense
Which I can't overlook;
Besides, I'm not an aper
Of other men's fool notions;
I follow nature's plan,
And that's the best, I reckon,"
Says he, the Box-hive man.



He gets a *taste* of honey
When every thing goes well,
But not till fall—
His hives are tall,
And made to *hold* the mel
Instead of making money;
But why he doesn't "get there"
Like others of the clan,
Has never once occurred to
My friend, the Box-hive man.

"I follow nature's plan,"



He leads a life of easy
Don't-care-how-this-world goes;
Contentedly
He sips his tea;
And if it rains or snows,
Is sunny, calm or breezy,
He smokes his pipe of comfort,
Disturbed not by a plan
That racks the brains of others—
My friend, the Box-hive man.

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY "STENOG."

"March forth!" says Queen to all her bees;
 "Provide 'gainst hunger—thirst."
 "Not so," says Drone; "let's sleep awhile;
 To-day is but the first."

BEE-KEEPERS' REVIEW.

J. E. Crane writes in favor of selling section honey by the piece instead of by weight. He says it seems to him a little absurd that the bee-keeper who produces thousands of sections of nice comb honey, all of an exact size, and nearly the same weight, should sell by weight, while the one who buys of him sells by count. He reasons from analogy that sections of honey varying almost nothing at all in weight might as well be sold by the piece as eggs that vary in weight as much as two to one. His points are well taken. If a dozen sections, for instance, are placed on the counter, and marked, "Your choice for 16 cents," each person buying can have what he considers to be the best; and if his neighbor has just bought a better section than he, what loss has he sustained so long as he gets just what he is willing to take, and knows the price?

One of the most experienced bee-keepers in the country in regard to the matter of wintering bees in cellar is Mr. C. Davenport, of Minnesota. Referring to the matter of the best time for setting bees out on their summer stands he takes a position that will go far toward bringing together those who advocate very early removal and very late. He says if the bees have wintered well, he finds it best to let them stay in the cellar till settled warm weather. If, on the other hand, the conditions have been such that early spring finds them very restless and uneasy, and many of them are leaving their hives and dying, the sooner they are set out the better. Mr. D. recognizes a middle ground, however, and says that, one year with another, it makes but little difference whether they are set out in March or April in his locality. He puts each colony on its old stand, as a rule.

Rambler calls in question the supposition that bees dislike black more than white. He wears a suit of blue jean overalls while at work in the apiary, and alternates this suit with a clean one every other day, leaving one suit in the soak while the other is in use. This gives him a clean suit every day. He says bees seldom make an attack upon *clean* clothes of any color. He finds if a bee-keeper will dress in a complete suit of black, and keep it clean, the bees will not be disposed to attack it. But he notes where there is a fuzzy protuberance on clothes or on a hat, the bees will persistently attack that point. He says a hole in a black hat is just what bees like to pounce on. The more fuzz there is on clothing, the more the bees will attack it; and when two or three bees discharge their poison on the same spot

the odor brings many more. He clinches his argument by asking how many bee-keepers have known bees to prefer to sting black pants rather than a white leg while they are crawling up inside of the pants. He adds, "That sting is a conclusive argument."

F. A. Snell, Milledgeville, Ill., drives a nail in the right place in a plea he makes for planting certain trees for honey, and especially the hard maple. This is certainly one of the best trees nature has given us. It grows fast, "yields a liberal amount of honey while in bloom, and blooms late enough so the weather is generally good for the bees to work." Mr. Snell is not so enthusiastic over the soft maple, as, on account of its extreme earliness, it is liable to be frozen so that it will yield neither honey nor pollen. It is a fine tree here, and is literally a "hummer" when the bees first strike it in early spring. It is a fast grower, and is one of the best shade-trees we have. Mr. Snell says the white (or gray) willow yields later than the maple, and furnishes honey and pollen well.

It seems that the question as to the origin of honey-dew, like the dew itself, will not "down." Mr. J. A. Nash, of Iowa, says that, a few years ago, there was a great yield of that stuff in Iowa, and before spring it had killed four-fifths of his bees in the cellar, where he had previously wintered a large apiary several times without any loss. He says he might have still believed it was a secretion of bugs had not an old bee-keeper come into his apiary one morning and said, "Look a-here. You told me this honey-dew was made by bugs. Now, I just cut a black-hickory tree that was covered with honey-dew, and there were not forty lice on the whole tree, as I could find, and I have two good eyes. Don't you think it was a sorter heavy strain on them lice to make all that? I allow they sot up nights." Mr. Nash says there were tons of that stuff gathered, and the lice could not be found at all.

J. H. Martin is enthusiastic in regard to having pretty apiaries. He says he used to cover his honey-house with paintings of the high-colored Italian bees. He found these bits of bright color were a great relief to the eye and the brain when tired with work. "A bit of bright color in the shape of a rose or geranium has the same effect where they can be grown judiciously." But Mr. Martin adds, in his own graphic way, "It may not pay in dollars and cents—certainly would not where the owner sees more beauty in a pigsty than in a bit of bright color." He says Mr. J. F. McIntyre has the most orderly apiary in Southern California. Owing to the beautiful pictures it makes, it is the best advertised apiary in the country. I am sure there is much to rest one by looking at bright positive colors. I find the tedium of shorthand writing is entirely relieved by using bright carmine ink a while, then some other lively color, such as blue, violet, or green. I supposed it was a notion of mine, but I see I am not alone. That

is why we like to change the color of the cover of GLEANINGS once in while. And then see how quickly boys will grab for a green or yellow firecracker rather than one of the regulation red kind. And how a rainbow stirs the soul by its charming colors!

W

AMERICAN BEE JOURNAL.

The comb-honey yarn is up again. Mr. York prints the following from the *Farmer's Voice*, of Chicago:

It is almost impossible to buy pure honey. Even honey in the comb is adulterated. A syrup of glucose and dissolved sugar is fed to the bees, and they fill the combs with honey, but it is inferior.

The clipping was sent to Mr. Eugene Secor, who replies with a complete refutation of the statement, mentioning, among other things, that Mr. Danzenbaker watched the agent of a glucose-factory in his attempts to get bees to take glucose, but it could not be done. Mr. York mentions a similar canard in the *Evening Post*, of New York. I replied to them in full, sending them a sample of foundation. I believe in replying to such statements by writing to the editors of the papers themselves, as they will in every case, probably, publish a fair statement of the facts as we know them. I am not sure that my reply appeared in the *Post*, but I am glad somebody's did.

As this is the shortest month in the year, and space is at a premium in GLEANINGS just now, and as the other journals have not come yet, it will be necessary to stop picking just here.



AN INTERVIEW WITH J. E. CRANE.

Wintering Bees; Wind-breaks; Smokers; Cheap Honey-packages; Plain Sections, etc.

[Some little time ago I told you that "Stenog" had taken down verbatim an interview that occurred between Mr. Crane and myself. At the same time a kodak made an attempt to preserve the visible portions of the interview; but when we came to develop the film we found, to our chagrin and sorrow, that it was "fogged;" and I am, therefore, unable to show you the two of us in animated discussion. Well, here is what flowed from Stenog's pen.—Ed.]

Mr. Root.—About how many colonies have you, Mr. Crane?

Mr. Crane.—About 525.

R.—In how many apiaries?

C.—Five.

R.—Don't you find that so many colonies in one yard are too many?

C.—Perhaps they give a little less honey per colony, but that, I believe, is fully made up in convenience in handling.

R.—How many helpers do you have generally?

C.—Only one.

R.—How many hours do you work a day?

C.—Well, we are supposed to work only ten hours; but sometimes the number is lengthened to twelve or even fifteen during the height of the season—it varies greatly.

R.—Do you produce comb or extracted honey?

C.—I produce comb honey altogether. I produce extracted honey from unfinished sections, and that is all.

R.—Why do you produce comb in preference to extracted?

C.—Oh! it is less work to do so; and, besides, I find a more ready market for it—those are my principal reasons—there may be others.

R.—How do you manage swarming at out-yards?

C.—Well, I remove the queens from some hives when the bees are preparing to swarm, and from others I remove the brood-combs, and give them empty combs, or frames supplied with foundation instead; cutting out queen-cells where the queen is removed, and giving virgin queens, after two weeks or more, to queenless colonies.

R.—Don't you find that an immense amount of work?

C.—Yes; but I have failed yet to accomplish very much without considerable work.

R.—Don't you sometimes miss some cells?

C.—I think very likely I do—undoubtedly; but I have observed that, where I keep a man in a yard to watch the bees, I also lose swarms; but the loss is no greater, so far as I have observed, by my method, than where I hire a man for each yard, and the profit is rather greater.

R.—Do you shake bees off the combs when hunting for cells?

C.—I do usually where the colony is very populous.

R.—Do you have blacks, hybrids, or Italians?

C.—Oh! I have all kinds, but most largely hybrids.

R.—Why do you have hybrids?

C.—Well, it is too much work to keep pure stock. I should prefer the best strains of pure Italians or else pure blacks.

R.—But wouldn't you have more difficulty in shaking the bees off the combs with pure Italians?

C.—There would be less necessity for shaking the bees off, because they remain more quietly on the combs.

R.—And is it a fact that, by this plan, you and one helper can manage over 500 colonies?

C.—We do so.

R.—About how many hours a day did you put in, each of you?

C.—It didn't average far from ten. Probably, during the height of the season, we put in more than that—doubtless eleven or twelve.

R.—Mr. Crane, has your experience with plain sections this season been such as to warrant you in using a larger number next season?

C.—It has.

R.—Do you have any trouble from the so-called ridging, with plain sections?

C.—No serious trouble.

R.—Would the average purchaser or consumer notice such ridging as you did have?

C.—I think not.

R.—Did you find that the faces of comb honey in any of your plain sections went beyond the edge of the sections themselves?

C.—I do not remember any except with the very few where the separator was too narrow. They built out above.

About how many tons of honey do you think have been produced the past season with fences or plain sections, Mr. Root?

R.—Oh dear me! you ask too hard a question.

C.—Well, give it as nearly as possible.

R.—I do not know how much was produced all last year. The season was poor; but I should think that anywhere from 10 to 25 per cent of all the comb honey produced last year was put up in plain sections.

C.—I am glad to know it. About how many persons have used them?

R.—Most of our customers who bought our latest goods bought plain sections and fences. There must be several thousand who bought them last season.

C.—How many have gone back on them?

R.—I do not know of any who have classed the plain section and the fence as a failure unless it is friend Thompson, in our issue for Dec. 15th last, or R. F. Holtermann in the *Canadian Bee Journal*. There are some others who found they did not work to their entire satisfaction; but when we began to investigate we found the trouble was due to the faulty construction of the fences. There may be others who have classed plain sections and fences as a failure; but if so, I am almost inclined to believe it is because they wanted to believe so in the first place.

C.—This is very important information. I was not aware that so large a proportion of the honey was produced in plain sections, or that so many were using them, or that their use was so satisfactory. Another question: Can a 1-lb. package for extracted honey be gotten up for a cent each?

R.—There may be possibilities along this line; but, so far as I know, no package has yet been devised of tin, glass, or wood, that would come anywhere near as low a figure as that. The nearest of any thing that I know of is an ordinary tin fruit-can holding 2 lbs. These can be bought in a wholesale way, I believe, from the manufacturers, for about 2 cts. a can, or at the rate of about a cent a pound for honey. These packages are not self-sealing—that is to say, the cap or cover has to be soldered on after the fruit or honey is placed in the tin.

C.—Could a package of tin be gotten up in the flat for one cent, so the bee-keeper could put them together?

R.—Possibly; but the manufacturers would have to have a very large order before they would attempt to make a smaller package in the flat.

C.—It is the same with extracted as with

comb honey. Consumers will sooner buy five 1-lb. packages than one 5-lb. package.

R.—I believe you are right. A little correspondence with manufacturers would show what can be done, at least. Mr. Crane, how do you winter your bees?

C.—Outdoors, packed.

R.—What is your percentage of loss, one year with another, in winter?

C.—It varies with the different yards. Where bees are sheltered from the wind the loss is, perhaps, not more than one or two per cent. One such yard two years ago came through without the loss of a colony previous to swarming time. There were nearly a hundred hives in the yard.

R.—That is a good record.

C.—Last winter, in the same yard I lost four or five; all, I believe, were hives that were without packing, and had little or nothing over the brood-chamber; half or more of the brood-frames open or exposed. Not more than one or two were properly packed.

R.—I understand, then, that this loss was due largely to the fact that the colonies were not properly packed, do I?

C.—Almost wholly that. Practically these and no others were lost. There may have been one or two more.

R.—What sort of windbreak do you have around the yard in question?

C.—An arbor-vitæ hedge, high picket-fence, and buildings to some extent. In fact, they are sheltered so that the wind is largely broken. And there are some pine-trees in the yard, too, that act as windbreaks.

R.—All things considered, wouldn't you prefer a high board fence?

C.—No, I should not.

R.—Why?

C.—Because a tight board fence turns the wind, and the wind is liable to go over the fence and swoop down in the yard with even more violence than where there is no fence nor any thing else around to produce heavy drifts, while a hedge of evergreens or a picket-fence, practically open, breaks the force of the wind. It simply slows it up. It is marvelous how a hedge of evergreens or a picket-fence will slow up the wind, allowing a very moderate amount to pass through and thus break the force of it.

R.—That is a good point. I notice at our home yard the evergreens accomplish such results as you have stated. The trees make a great roaring when the wind blows through them, but within the inclosure every thing is comparatively quiet. Years ago, when we had a tight board fence it had a fashion of blowing down occasionally; and then very often it would bend at an angle of 45 degrees, giving the wind a good chance to swoop up and down, as you say.

C.—I now consider the question of wind one of the most important in the location of an apiary.

R.—Mr. Crane, what size of entrance do you prefer on your hives, all things considered, winter and summer?

C.—The summer entrance to most of my

hives is $\frac{5}{8}$ inch by the width of the hive in length.

R.—If you could change your entrances to wider, would you do so?

C.—I am not sure. They answer well, excepting a very few days in extremely hot weather, with hives that are exposed to the sun.

R.—And that reminds me. Do you prefer shade of some sort for your hives?

C.—A little, but not too much.

R.—A shade of what sort?

C.—Trees. By the way, in speaking of protection from wind, one thing must be guarded against; and that is, that bees should not be too much protected from the wind. A screen of some sort of evergreens, or a picket-fence that will allow a moderate wind to pass through, is to be preferred to one where the wind is entirely broken off, as, during the early spring, when there is sunshine, the atmosphere will warm up inside of such an inclosure so as to entice the bees out, when they will fly above and outside of the protected location, and be lost. I knew one man who lost nearly all of his bees just from this cause. He had a very tight yard.

R.—Mr. Crane, what size of hive do you use?

C.—The brood-chamber is an eleven-frame Langstroth hive; but I have found myself slowly reducing that until I believe at the present time I have only one hive that has eleven combs in—mostly eight combs.

R.—Do you find the eight-frame size large enough for the breeding capacity of good queens?

C.—I find that, where bees are properly protected, and they secure early forage, they begin swarming as soon as clover begins to bloom—in fact, more frequently before clover opens, while as yet there is no honey in sections and but little in the brood-chamber.

R.—Did you ever try running colonies in two stories?

C.—I have.

R.—What were the results?

C.—I have never used them except for extracting purposes and tiering up sections. I sometimes have as many as three supers, one above the other, on a hive.

R.—Did you ever try working for both comb and extracted in the same colony?

C.—Not at the same time. Sometimes I put on an extra story, and allow the bees to fill it; and then I remove it and put on sections.

R.—I have often done that; in fact, for our locality I believe I can get more actual honey, both comb and extracted, by such procedure; and, at the same time, while not actually preventing entirely, to a great extent it discourages swarming. I avoid the hunting-up of queens to cage or remove them, and the subsequent hunting for queen-cells. I wish you would try a few colonies in one of your yards, and see how it works.

C.—Swarming is the most difficult thing we have to contend with. Mr. Root, how soon do you think you can get a strain of bees that will not be inclined to swarm any more than Leghorn hens are to sit?

R.—In the millennium of apiculture. I do believe, however, that something may be done in that line by careful selection in breeding. But somehow bees do not yield so readily to man's whims as poultry and other live stock.

C.—I doubt that statement.

R.—I hope you are right.

C.—The fact that one of the strongest qualities, or one of the qualities most called for (color), has been produced already, would indicate that it is only the demand for a variety that will not swarm, and queen-breeders would presently give us what we ask for.

R.—But don't you think that color yields more readily than any other natural characteristic in insect life?

C.—No, I don't. Like produces like the world over. The law holds good in all vegetable and animal life.

R.—Well, I hope you are right.

C.—Other qualities are produced in other animal life; whatever man desires, by careful selection he has so far been able to secure. If he wants a good cow for butter, he breeds for that purpose. Within the present generation the capacity of the dairy cow has been increased nearly or quite three times above what it was fifty years ago. The same has been true of the production of cattle for beef, and the same is true in the production of sheep for wool. The Spanish merino, introduced into this country perhaps fifty years ago, now produces three times the wool from the same amount of carcass. Of course I refer to best bred animals.

R.—Mr. Crane, whenever I am worsted in argument I always like to change the subject. What do you know about the Crane smoker?

C.—I know that I used one that you sent me three years ago, for three seasons, on 400 colonies of bees, or nearly that, and it was nearly or quite as good at the end of that time as at the beginning. I know no more than that, except that the jacket was broken away from the rivets, and some of the nuts on the bolts lost, but I used it just the same.

R.—Do you have any trouble with the valves sticking?

C.—Very rarely, except in damp days in midsummer, when it is run constantly from morning till night, and the most sticky fuel possible used—cloths coated with propolis. Probably it has not bothered half a dozen days in three years' usage. I think that, to produce the best results, however, they should be occasionally taken apart and cleaned.

R.—I find there has been a little complaint of their clogging; but a little intelligent care will keep them working free and easy.

C.—I have sometimes wished the bellows was a little larger.

R.—But, Mr. Crane, the peculiar feature of the Crane smoker is its strength of blast.

C.—By the way, I had one last season that held fire all night, and we found it in good running order in the morning, ready for work. This was probably the result of using such carbonaceous fuel as cloths coated with propolis.

R.—You spoke a moment ago about propolized cloths. Don't they daub your smoker

all up with creosote? and why do you prefer them to other fuel, or why do you use them at all?

C.—My helper prefers them to any thing else, because, when once well filled with them, the smoker will go longer than with any other kind of fuel. We prefer them because the fumes of the burning propolis seem to subdue bees better than any other substance with which I am acquainted. I take it to be the volatile oil produced by the heating and burning of the propolis, as may readily be perceived by placing a quantity of propolis in water and setting it on the stove. Perhaps the delicate aroma of the burning propolis has something to do with the subduing of bees.

THE MORTON SWARMING-POLE.

How to Take Swarms out of Trees, Without Climbing; Full Directions for Making the Machine.

BY E. R. ROOT.

It was a dismal dreary day, when I last stopped at the home of the late Miles Morton; and the rain was pattering down in that quiet way that meant it had come for all day. We could not drive around to see bee-keepers as we had planned, so we busied ourselves in the shop, looking at the various ingenious contrivances of Mr. Morton's.

"See here," said Niver; "here is something you ought to list in your catalog—one of the handiest things we ever had. The neighbors

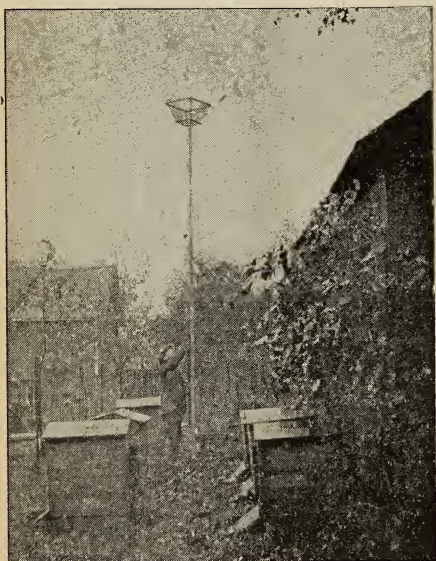


FIG. 1.—THE MORTON EXTENSION SWARMING-POLE.

borrowed it; in fact, it was in demand nearly all the time. The one for the home apiary was so handy that we had to have extra ones for the out-yard."

So saying he hauled out a long double-jointed affair with a wire-cloth basket on the end. It was so long that he had to take it clear outdoors in the rain.

"Now," said he, "you stay inside and keep dry, and I will illustrate the *modus operandi*."

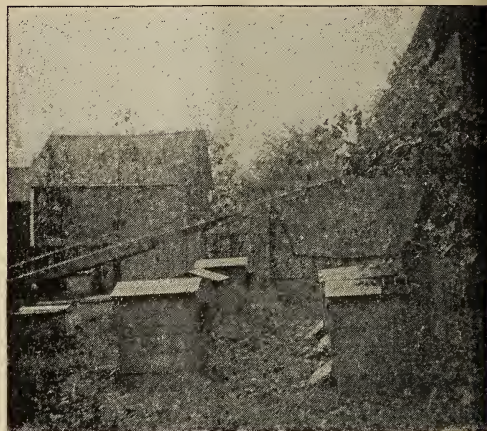


FIG. 2.—SWARMING-BASKET TO THE MORTON SWARMING-POLE.

"Hold on! wait a minute," I said; "let me fix up my kodak."

"Oh! but you can not photograph me in the rain."

"Yes, I can. There, you hold still while I take a 'time exposure.' One, two, three, four, five, six, seven, eight, nine, ten—there, I have you. Now, then, go ahead and operate."

He stood the pole up in front of him on the ground. This brought the basket some 12 feet above terra firma. He then pulled on a little rope until the thing extended up into the air some 12 feet more.

"There," said he, "how is that for high?"

"Wait a minute till I catch you again;" and as the rain pattered down in what seemed like a never ending patter I counted off another "time exposure."

"How high is that basket now?" I yelled out.

"About 23 or 24 feet. But see here," said he; "I can run it up to 30;" and with this he lifted the pole up so that the bottom was above his head. "It is not often that a swarm clusters higher than 30 feet," said he. "They seem more inclined to select the lower limbs."

"But suppose the swarm does cluster higher."

"Oh! then I suppose we should have to shin up the tree. But I should not have to climb nearly as far with it. I would lean the pole up against the tree, so when I had climbed high enough I could pull the pole up after me; then when I had got hold of the bottom I would pull out the extension, run the basket under the bees, bump them in, pull in the extension, then hand pole, bees and all, to an attendant."

"But suppose you do not have an attendant," I said.

"In that case," he replied, "I would lean the pole against the tree, shin down, and then move the bees."

The thing certainly did work very nicely, even out in the rain. There was not any swarm, of course, upon a high limb to try it out; but I could see one in my mind's eye, that little chap of a Niver, 5 feet 4, taking a swarm down and dumping it into one of Morton's big hives.

After Niver had gone through the performance to my satisfaction I asked him to "kindly stand out in the rain a little longer" while I photographed the top part of the apparatus showing a view of the basket; and the result is shown in Fig. 2.

"That thing is certainly very ingenious," I said.

"Yes," said Niver. With this he came inside and began to dissect the same. I made some rough sketches, brought them home to our artist, who elaborated them into a drawing as shown in cut just below.

The machine consists of an outer hollow pole and an inner one, both square. The outer pole is virtually a long box about 2 in. square on the outside, and 12 feet long. A cross-section is shown at 2 in the cut. Inside of this hollow square pole another square pole of about the same length, and just large enough to slide up and down easily, is made. A longitudinal groove, about $\frac{3}{8}$ inch wide and deep, running its entire length, is cut on one side, as shown at D, D. This groove is to receive the rope C, C. At each end of the outer pole are let in two ordinary sash-pulleys, as at F, and an ordinary clothesline is then passed through the pulleys. The grooved inner pole is then slid into the outer one, so that the rope lies in the groove. The two ends of the rope are then fastened *at one end*, and "this is where the fun comes in," says Niver; "for it is quite a trick to get the two ends of the rope fastened, and yet have the rope taut after the job is done." The thing to be accomplished is this: The two ends of the rope are made to abut together in the groove four or five inches from the

bottom end. They are then stapled down securely. The rope may be fastened as at G, in the drawing; but Mr. Morton had the two ends of the rope abutting together in the groove.

Now, be sure and not make the mistake of fastening the rope at *each end* of the grooved pole, for that will never do, because that will render it impossible to draw the inner pole out of the larger one, as you will see by a moment's reflection; and if you will reflect a little more you will see that it is not an easy matter to fasten the ropes at one end so they will be taut. Although there are two or three ways, Morton's method was to cut off the strip that holds the lower sash-pulley, at a point about five or six inches from the end. This piece, with the pulley, can be pulled out of position temporarily. It is now possible to bring the two ends of the rope together, because we now have a little slack. After they are fastened end to end, the piece with the pulley is sprung back into place and fastened with screws.* If every thing has been done right this will take up the slack of the rope, and make it taut.

If there should be enough demand for a contrivance of this kind we would have it listed in our catalog, and I am sure there would be a good demand if bee-keepers only knew its value; but for the present I have given full particulars how to make it, so that those of a mechanical turn of mind can, in these long winter days, have one or more of these poles in readiness for next season.

IS SWARMING CONTAGIOUS?

Eighteen Swarms all in One Bunch; A Remarkable Experience.

BY F. E. BROWN.

Will bees swarming attract those that are in their hives, or, in other words, will the swarm while in the air cause others to leave their hives? I am inclined to think that they do, under some circumstances. I will try to describe an experience that I had in that line on one occasion. It was when I was located in the Coast Range, and the apiary was situated in a canyon where the mountains came all around except one side, forming a little horseshoe cove. The mountain was steep and high, so the bees had to fly around over the apiary when swarming.

On this occasion I had 200 swarms, and they were all in a bunch with a few trees scattered through the apiary. It was the 5th day of April when an assistant and myself came to the bees. I was surprised to hear a swarm out. They settled on a small cedar-tree some 10 ft. high, and quite slender. While we were preparing a hive for them there was a shout of another swarm. Soon it settled on top of the other. We then shook them off into two separate hives; but there was another swarm coming from another hive; and before they settled, the other two came out from the

* Use screws so that the piece may be removed for the future, to take up slack when necessary.

hives they were placed in, and joined the swarm then in the air. Times began to get interesting. Soon two more came out from the apiary and joined the other three. This makes five that were in the air at one time, and it was at this point that the fun began; and of all the sweet music that was ever heard from bees emanated there. The morning air was still and clear; and the roar of the bees was all that could be desired in that line.

But, what could we do with the bees? Soon they began to settle on the top of the little cedar-tree, and soon the tree began bending to the ground, when I ordered some hives to be brought and placed around the tree. Then we began shaking off and carrying away; but other swarms kept coming forth, and the ones that we hived would stay only a few minutes and then come out and again join the great army of bees that were still clinging to the tree and flying about it in such a way that it was hard to get to the tree, as the very air was full of bees—bees everywhere; and such a roar of bees! To make a long story short, we would shake off the bees into boxes and carry them off; and as fast they would come out and go back to the swarm on the tree, while all the time there were other new swarms coming forth, and we kept this up until noon, when, being tired, and not meeting with success, we went to dinner some one-fourth mile down the canyon. While we got out of sight of the bees, there was the music still.

On returning, the tree was a perfect arch, the top resting on the ground, completely covered with bees, and, for about two feet through, a solid mass of them, and still they came out, and the air was as full as I ever saw. We began once more to shake off and carry away, just as you do in the East when thrashing oats, measuring out and carrying away. We kept account of the swarms that came out, as far as we could, and we knew of 30 that came out during the day. But, to go back a little.

About the middle of the afternoon we gave it up as a bad job, and sat down to see what would be the outcome. While thus seated I asked the man who was helping me what course he would have taken had this occurred when I was away. The answer was that he would have rolled his blankets and started across the mountains, seeking other occupation. At about 4 o'clock they all took wing, and, as I supposed, they were going to take across the hills instead of my man; but, not so; they had decided to try another tree for a while; but when that multiplied multitude of bees came from that tree and rounded up over the apiary it was a sight to hear and see; and, to our surprise, the bees that were in their hives apparently quiet came out, and left brood and honey.

I suppose some are anxious to know how we managed the bees. I was quite anxious at that particular time; but as the sun went down behind the western mountains, about four o'clock, and the evening shades brought the usual coolness with it, the bees began to go back to their old homes again, and we had better success in keeping the swarms in the hives; and when the day's work was fully

over and all quiet, there were just 18 new swarms.

The next day the same thing occurred again, and the 18 swarms of the day before were just as frantic as they had been the day before; and all that spring, when we had heavy swarm days, the bees from new swarms would desert, leaving brood and honey. On some occasions the hives would be nearly full of freshly gathered honey and plenty of brood.

Hanford, Cal.

[Well, friend Brown, it looks as if you had broken all the records—or, rather, your bees have. Eighteen swarms in one bunch, and eighteen swarms in the air at one time! Did any one ever hear of the like of it before? I would have given something to hear that mighty roar made by something like a million or more of wings.

There is any amount of evidence to show that one or more swarms in the air at one time will induce others to go forth; but as a general rule the average bee-keeper is not troubled by more than two or three swarms in a bunch. Under those circumstances he usually divides them by the dipperfuls into two, three, or four. These are then put into as many hives, and compelled to go to housekeeping, even if each family, as it were, is made up of members of two, three, or more other families.—ED.]

J. P. ISRAEL.

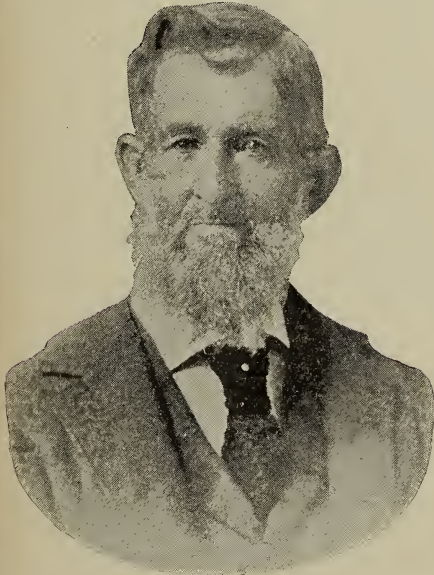
BY J. M. HAMBAUGH.

Died at his home in San Diego, Cal., at 11.30 P. M., Dec. 31, 1898, Mr. Joseph P. Israel, in the 76th year of his age.

J. P. Israel (alias Skylark) was born in Pittsburg, Pa., in November, 1822, and was married to Miss Elizabeth Falkner, of that city. As a result of their marriage, four children were born to them, two of whom are still living—Mrs. Cordelia Lane, of Pittsburg, Pa., and Mrs. B. R. Robinson, who has been living with her father since the death of her husband many years ago. Mr. Israel came to California in 1849, but did not become a permanent resident of that State until 1882, when he moved to Escondido. It was here that the writer became acquainted with him, and our acquaintance ripened into true and lasting friendship. Little did we realize, when we wrote a biographical sketch of him, which was published in GLEANINGS for July 15, 1898, that we should so soon be called upon to pay the last tribute of respect to his memory. Mr. Israel's work as a writer is well known and remembered; and his quaint humor and at times sarcastic tilts that were so characteristic of his writings will long be remembered by those who saw fit to cross pen-points with Skylark. Mr. Israel was a highly cultured and polished gentleman, and, above all, a patient, forbearing, true Christian. His daughter has said, never did she know him to be angry. "He was a Christian in every act, word, and deed." He was well versed in Scripture, and a Baptist by faith. A letter from Mrs. Robinson states that her father was in his usual good health

and cheery mood up to the time of his departure to bed, which was nearly ten o'clock on the night of New Year's eve, she retiring to her bed in a room adjoining. She had retired but a short time when she heard the voice of her father calling. Springing to his bedside she found him suffering from what he termed a cramp in his chest. She did all in her power to relieve the pain by local applications, but his condition became alarming, and, against his desire, she sent for two physicians.

"No, my dear, do not send for the doctor. I shall be all right in half an hour." These were his last words, for but a few minutes elapsed when a return of the awful pains seemed to paralyze him. Almost without a struggle his spirit calmly departed, and with the dying of the old year the spirit of J. P. Israel took its flight to don the robe of immortality; and as the morning star heralds the approach



JOSEPH P. ISRAEL.

of the coming dawn, death's messenger to him was the dawn of the morning that knows no night, measured only by eternity. Blessed assurance! The great heart was stilled, but his spirit for ever at rest. The only persons present were his beloved daughter and nephew; and while our heart goes out in sorrow for her who has so patiently and lovingly administered to the needs and wants of her aged parent for years, we can only say, "God's holy will be done; he giveth, and he taketh away. Let us bow in humble submission to his divine decrees." Let us trust that there will be a re-uniting of loving hearts across the river, where sorrow, suffering, and separations are no more.

Mr. Israel was interred in Mount Hope Cemetery, and a large concourse of citizens paid their last tribute of respect by following the remains to their last resting-place.

Escondido, Cal.

CALIFORNIA ECHOES

BY J. H. MARTIN.

February 10th finds Southern California with only about three inches of rain for the season in the vicinity of Los Angeles, or only about eight inches for two years, or about as much as falls in one good long soaking rain in the East.

Our two inches in January gave vegetation a start, and sage is making a fair new growth. Mr. Shattuck, an old-time bee-keeper, told me that, if we had rains the latter portion of February or in March we should have a honey-yield. While there is life and the blue skies above us there is hope for the bee-keeper.

A carload of bees was recently moved from this county to the alfalfa-fields of Arizona.

Mr. Frank J. Farr, of Pasadena, in this county, who had good success in moving bees to Utah last year, is getting together another carload for the same destination this year.

There will be an exodus of many bee-keepers if the dry weather continues, and there will be an exodus of several thousand colonies of bees to the sweet by and by, as the bee-keeper will make an exodus into some other business.

Mr. Farr says that the bee-paper which publishes the names and addresses of correspondents has his unqualified approval, as the name and address of parties in Utah, who had a communication in GLEANINGS, led to correspondence and finally to a removal of bees from California to Utah. Mr. Farr says that name and address were as good as a thousand dollars to him. Bee-journals that give only the name of the writer of a communication, and only the county in which he lives, take warning.

Judge Noah Levering is preparing to migrate again to his northern apiary in Siskiyou Co. That portion of California has received a good rainfall, and ought to yield a good amount of nectar. As to whether the Rambler will or will not migrate with him is still an open question.

Mr. and Mrs. Frank McNay, of Portage Wis., after spending the winter in this city of the angels have returned to the East. Mrs. McNay was just as good an angel as though to the manor born. The best wishes of quite a number of bee-keepers will follow them to their home. They are good people to have around.

Mr. George W. Brodbeck has purchased a goodly portion of land near Calabasas, and is at present improving it and putting it into shape to receive his apiary. Mr. B. winters his bees in the suburbs of this city, and moves his bees to Calabasas only as the season war-rants.

Mr. B. thinks it will be for his health to live out in the hills where the odor of the sage brush, the song of the mockingbird, and the savory quail and rabbit are all at hand. When he gets established he proposes to keep open house to all of his bee-keeping friends.

Mr. J. M. Crow, a bee-keeper who moved to this city from Encinitas, San Diego Co., has built his nest in the rough and rugged canyon of the Little Tahunga, located his apiary there, and also has a good prospect for developing a gold-mine. All good bee-keepers are welcomed to the Crow's nest.

REPORT OF INSPECTOR OF APIARIES.

An Interesting Report.

BY WM. M'EVROY.

During 1898 I visited bee-yards in the counties of Essex, Middlesex, Huron, Grey, Wellington, Simcoe, Cardwell, Norfolk, Wentworth, Lincoln, Peel, York, Ontario, and Victoria. I examined 100 apiaries, and found foul brood in 32 of them. Nearly every bee-keeper who had foul brood in his apiary wrote me private letters about it, and, working on the rule of doing to others as I should like to be done by, I treated all such letters as if they were marked strictly private, and always will. By working along this line in a quiet way, and helping the owners of the diseased apiaries to cure their colonies, I have been able to find out more about who had foul brood in their bee-yards than could or will ever be found out in any other way. I am very much pleased with the way the owners took hold and cured their apiaries, and particularly so with two that were cured by two ladies in the county of Simcoe. These two ladies did the best work in the shortest time that I ever had done, and with two of the worst foul-broody apiaries that I ever handled. Scarcely one week ever passes now without my receiving more or less letters asking questions about foul brood and dead brood of other kinds. I have also received very many samples of comb with dead brood in, and about seven out of every ten of these were genuine foul brood. The most of the letters and samples of comb with decayed brood in, came from many parts of the United States, and the others from bee-keepers in the Provinces of Ontario, Quebec, and Nova Scotia.

About how long would foul brood be in a colony before it would become very bad with the disease? was one of the questions asked by several of the writers. I answered, saying, sometimes not more than one week; in others, over one year; but in most cases, less than three months. Just how soon or how long it would be before any diseased colony would become very bad with foul brood would depend entirely on how much or how little of the honey was diseased. The honey, to become diseased, must be stored first in cells where foul-brood matter had dried down; and when any honey is removed from such diseased cells to cells partly filled with sound honey it will infect the latter also. Foul brood is spread through a colony just in proportion to the amount of diseased honey that is fed to the larvæ. I sent Mr. Gemmill out a part of the time and he inspected 15 apiaries, and found foul brood in three of them. I am very much pleased to say that neither Mr. Gemmill

nor I had to burn one diseased colony. We found all parties willing to cure, and gave them a chance to do so. I believe that the Province of Ontario has fewer diseased apiaries for the number kept than any other country in the world, judging by the number of letters that I have received. For the very nice way that Mr. Gemmill and I have been treated by all parties while on our rounds through the Province we return to them our most heartfelt thanks.

Woodburn, Ont., Can., Jan. 10.

[Foul brood must, some ten or fifteen years ago, have made fearful headway in Ontario. If I mistake not, a once leading bee-keeper is partly responsible for this state of affairs. In selling bees, it is said, he was not careful in the stock he sent out. In fact, I have been told that he said foul brood was so easily cured it did not make any difference, as every one could cure the disease in his own apiary. Whether this is so or not, I can not say; but if true, his carelessness has cost the bee-keepers of Ontario an immense sum of money. Very fortunately, foul-brood legislation was secured, and a careful and thorough inspector, Wm. McEvoy, was secured to put into practical effect the foul-brood law. I am glad to know, too, that an assistant, as careful and conscientious, has been secured in the person of F. A. Gemmill. Two better men could hardly have been found throughout Ontario, and it is safe to assume that, through their untiring efforts, the disease foul brood will in time be an almost unknown quantity.—Ed.]

TRAVEL-STAIN.

Propolis on the Cappings Due to the Travel of the Bees.

BY A. E. MANUM.

Mr. Editor:—In Jan. 15th GLEANINGS I find a very interesting article from the facile pen of my good friend and benefactor Mr. J. E. Crane. I read the article with much interest; but as the conclusion he arrives at is at variance with my observations and my understanding of the nature of the honey-bee, I beg to disagree with my friend on some of the *fine* points he makes regarding the cause of travel-stain.

Although Mr. Crane lives only 12 miles from me, where I could easily reach him in person, I will, instead, and with your permission, Mr. Editor, use GLEANINGS as a "cushion" in the attempt to make a "carom shot" at my friend; and if I succeed in making a hit I hope it will have the desired effect in drawing him out still further on the subject of travel-stain.

Knowing as I do that Mr. Crane is a veritable encyclopedia in bee science, I feel sure that, if he is hit hard enough to stir up his ire, he will open his book of knowledge from which all may read and receive further light.

Mr. Crane asserts that the discoloration often seen on cappings is not travel-stain caused by dirty feet, as generally supposed.

He says, "I consider the whole idea of travel-stain as a foul slander, . . . and as infamous." He goes on to prove that the cause of discoloration is due to some foreign substance which the bees gather and incorporate with—or weld to—the wax as a means of economy, and mentions several substances which may be used by the bees to adulterate their wax. Mr. Crane makes one good point in his argument; and this is in the matter of the blue cloth to which he refers, and which would appear quite conclusive if left where he drops it. He also accuses the bees of making use of large quantities of propolis as an adulterant. He says: "It is used late in the season when *wax is scarce* . . . and in such quantities as to be easily seen by the naked eye."

Now, my observations lead me to believe that bees produce wax in accordance with their requirements, although it would seem that they dislike to draw upon their already accumulated store for the purpose of producing wax late in the season, and hence leave some of their work undone.

My friend Crane asserts that the bees go about the interior of the hive in search of particles of comb, cappings, dirt, propolis, or what not, to weld on to and stretch out their scant supply of wax. This is contrary to my observations, and I am, therefore, not yet prepared to accept that theory; and I believe he accuses the bees wrongfully. That the surface of comb honey is sometimes soiled, I admit; but what is the cause of this discoloration? Must we accept the theory that bees purposely make use of foreign substances for the purpose of economy? *I can not.*

Mr. Crane makes mention of the under side of the cappings being stained as well as the outside. I would account for this by the fact that, while the bees are "slowly" doing their cappings late in the season, as he says, their feet being more or less soiled, from various causes which I will explain further on, they stain the inside of the cappings as well as the outside while manipulating the wax. To my mind this would account for the "blue stain" that Mr. Crane noticed on some of his cappings.

You are well aware, Mr. Editor, that wax is very susceptible to any stain—so much so that it is difficult to cleanse when once it is stained. My theory is that the blue cloth referred to, being picked at while capping was being done, more or less of the particles of the bluing adhered to the hair-covered legs and feet of the bees; and the wax being soft, and in a retentive condition, more or less of the coloring adhered to the flakes of wax while being manipulated and formed into cappings. Again, it is well known that wax is a natural product of the bee, and, we suppose, produced at will. It is secreted from the under side of the abdomen, and from this locality the small white flakes are removed to the mouth by the forward feet of the bees; and if, perchance, their feet are soiled by any foreign substance, such as bluing, pollen, propolis, or dirt, it seems quite possible that some of this dirt may adhere to the particles of wax during the trans-

ference and manipulation, and thereby cause discoloration, both on the under side and top of cappings. Here is where I think Mr. Crane misjudges the bees. The coloring-matter he finds in the cappings I believe to be accidental, and not intentional, as he would have us believe. He intimates that bees make use of propolis in capping their honey, as he has seen large quantities of it on the cappings. Now, I am of the opinion that the cause for its being so very observable on some cappings is due to travel-stain, as I have never noticed it except after there has been an abundance of propolis gathered; and as they use their fore feet to form the pellets on their hind legs, as well as to remove it from the hind legs after reaching the hive, it is very likely that more or less of this sticky substance *must* adhere to their feet; and as bees usually fly home, the feet are not relieved of it before reaching the hive; so that, in walking over the combs, they are relieved of the sticky substance by its adhering to the waxy cappings. It is also the same thing over in pollen-gathering and pollen-stains, commonly called travel-stains.

Mr. Crane gives the bees great credit for neatness, and justly so; but let us see, Mr. Editor. Did you ever work among your bees 30 minutes, handling brood-combs, without soiling your fingers? *I never did.* Then, if the combs will soil the operator's fingers, why not also the feet of the bees? and they in turn soil our nice white section honey if left on the hive a little too long. Furthermore, what is it that stains our new white separators, edges of sections, and new frames, if not travel-stain?

My opinion is that not *all* discoloration is due to dirty feet, but partially due to their pollenized bodies, as we often see bees pretty well besmeared with pollen, which adheres to them while visiting large flowers, such as pumpkins and squash blossoms; and while passing each other between combs it is not unlikely that occasionally their bodies rub against the cappings, when the pollen will adhere to the same, and thereby cause more or less pollen-stain.

Bristol, Vt.

WHAT COLORS THE WAX OF HONEY-COMBS?

An Interesting Exposition of the Subject.

BY THADDEUS SMITH.

My attention was directed to this question several weeks ago by reading something on the subject by Mr. D. L. Adair, in the old *American Bee Journal*, Vol. III., page 208; and again the matter has been brought to mind by Mr. Crane's recent very interesting article on so-called travel-stained combs, in *GLEANINGS* for Jan. 15. But as the question above has not been fully or satisfactorily answered by Mr. Adair or Mr. Crane, nor by any one else, so far as I know, I propound it to our successful and scientific bee-keepers for an answer. Mr. Crane does not discuss the question in its broadest sense, nor make an at-

tempt to answer it. He only shows how the cappings of some comb honey becomes colored and is erroneously called travel-stained. If I understand him he thinks that it is all caused by the incorporation of some foreign substance with the natural wax of the bees in the cappings of the honey-cells. It may be of colored wax taken from old combs, colored cappings from hatching brood-combs, propolis, or other foreign substances. This he has no doubt shown, sometimes, is the cause of colored honey-combs. Mr. Crane's position and arguments would lead us to the conclusion that honey once capped over does not change its color, or become travel-stained, by being left on the hive. His main argument for this conclusion is based upon the fact that he found the cappings, taken from stained honey, to show as much (or nearly as much) color on the under side next to the honey as on the outside. He argues that this supposed-to-be outside coloring-matter could not possibly penetrate through to the wax so as to show on the inside; therefore it must have been incorporated with the wax when the cappings were put on.

This argument, or, rather, the superficial observations that led to it, are faulty. Wax in thin layers is translucent. If colored on one side the color will show *through* on the other side. To verify this I had my eight-year-old grand-daughter get out her paint-box and color some cappings, on one side only, in various shades, from light cream to brown, and even blue. I placed the pieces on a sheet of paper to dry, and when examined I found the color to *appear* nearly as dark on the under side as on top. I think that most bee-keepers will not be ready to agree that all the coloring-matter on honey is incorporated in the cappings.

But my original intention was not to discuss Mr. Crane's position. I had determined to call attention to the coloring of combs before I had seen his article. I want to get down to the root of the matter: What causes the comb, that is so beautifully white when first made, to soon change its color to yellow, then brown, and finally nearly black? I may be answered, flippantly, that it is because it is old—old comb turns yellow. Because brood is raised in it, raising young bees in it makes it dark; they foul it, you know, and the shell of the larva remains in the cell, and that colors the comb. The combs are colored by the bee-bread and the pollen and the propolis that the order-loving insect has left scattered around loosely. These substances are very highly colored, don't you know? Yes, they become "travel-stained." The accumulation of dust (from the flowers) and dirt upon their feet and their bodies during their long hot journeys in search of nectar is all brought home, and goes to stain the combs.

But these answers do not satisfy my inquiry. A piece of virgin comb taken away from the influence of the bees, and kept from dirt, will never turn yellow by age. Combs that have never been used for breeding, and that have never contained pollen, when left in a hive under the influence of a large colony *do* turn yellow. The other answers need no comment.

I have alluded to an article written by Mr. D. L. Adair, on "The Economy of the Bee-hive," published in the old *American Bee Journal*, as heretofore noted, in which he says something about the coloring of combs. Mr. Adair was writing to sustain his theory that bees could live without a continued supply of fresh air, and only incidentally mentioned the coloring of combs; but that mention brought the inquiry to my mind. He spoke of the compensating laws of nature in the animal and vegetable kingdoms. The animals, in breathing the air, throw off the carbonic acid, which is taken up by the leaves of the plants, and this restores the air to its original condition; so in a properly constructed *aquarium*, furnished with water-plants, snails, etc., the fish breathe the air and produce carbonic acid, which the plants make use of and restore the air. The snails eat the foul matter, and are themselves eaten by the fish. This is a short synopsis of a part of his argument. I want to make a quotation. He says: "God did this, not man. When he created the fishes he made an aquarium for them. Was he less mindful of the 'little busy bee' when he gave it a habitation in holes in trees, where, from the very nature of things, they would be frequently deprived of fresh air for months at a time? Experience says not. The bees produce, by breathing, carbonic acid, which, if there were nothing to take from it the carbon, would destroy them. There are no plants to do it; but we find in the hive several things that may answer the purpose. The comb, it is well known, is at first pure white, but first turns yellow and then dark; and as it gets older it becomes perfectly black. Something must produce this effect. May it not be this very carbon that it absorbs that colors it? It is further known that, the older the comb, the heavier it gets. This is not only true of the comb in the middle of the hive where the breeding is done, but more so at the top where the honey is stored. It may be said that carbonic acid is heavier than air, and therefore settles below. We have shown that it first rises from being heated and thus rarefied."

We may not all agree with Mr. Adair's theory of ventilation, nor with his suggestion that combs are colored by the absorption of carbon; but we must admit that there is, in some way, a close connection between the clustering, living, and breathing of the bees upon the comb, and the coloring of the same. The more densely the hive is populated, the sooner the combs become yellow. If the colony is so large that a part of the cluster extends up into the super, and cling to the lower part of the section honey, and are allowed to remain there until cold weather drives them down, the lower ends of those sections will be colored. In weak colonies, and combs some distance from the cluster, the process goes on more slowly, if at all. The small colony doesn't seem able to get up steam enough to carry on the process of coloring, if I may be allowed to use such an expression about a process I know nothing about. Mr. Crane says, "I had less travel-stain when my bees were allowed

to swarm than when I try to keep every swarm strong." The strong colonies stained the honey most. And, again, he illustrates this by another incident, although he gives it for a different purpose. A strong queenless colony was put into a hive filled with foundation in July, and allowed to remain queenless; and after four months the hive was found full of sealed honey almost entirely free from travel-stain. Of course, this queenless colony soon began to become weak.

Does this coloring process, or matter, whatever it is, penetrate the very body of the wax? Melt a piece of virgin comb carefully in clear water, and the result is white wax. Melt a piece of comb that has never had young bees or pollen in it, but has turned yellow in the hive, and we get yellow wax—the color of all commercial wax that has not undergone the process of bleaching. Some chemist might try the effect of carbonic-acid gas upon pure white comb, and test Mr. Adair's theory. Pelee Island, Ont.

[When Mr. Crane was here he lifted some of the cappings of some of our travel-stained honey and showed the discoloration on the back as well as in front. But Mr. Smith seems to be of the opinion that color or stain, while only on the surface, may show through the wax, owing to its partial transparency. To prove or disprove the point I went at it in this way: I took several sections conspicuous for their travel-stain. Knowing that gasoline is a solvent of wax, I took a piece of waste, saturated it, and rubbed it lightly over the soiled parts of the capping, thinking that, if the stain were simply on the surface, this gentle rubbing with the gasoline waste or rag would remove a very slight film from the face of the cappings, taking with it the stain; but, no matter how much I rubbed, the stain remained as long as the capping; for if I rubbed long enough, the capping would entirely vanish, the gasoline gradually absorbing the wax.

I went over quite a number of sections in this way; but in no instance did I find that the stain disappeared, for it seemed to be *clear through* the capping. Previous to this I tried soap and water; but it had no more effect than if the face of the honey had not been touched at all.

I next took a sharp-pointed blade and lifted several of the cappings of the combs, and in some instances, at least, it seemed as if the stain itself was on the under side rather than on the face. Under a strong magnifying-glass I pulled the cappings into shreds, but the stain seemed to be in every particle.

A travel-stained face of comb honey may have a yellow look or yellow spots, or it may have chunks of red propolis scattered here and there. These latter can be removed with a sharp knife, showing that they are wholly on the surface of the capping. But when the cappings have a *yellow* appearance, the stain seems to go clear through the capping. Now, this yellow, according to my theory, is caused by propolis; for I notice that honey is more apt to be travel-stained toward the close of the honey season, or about the time the bees

have more time to bring in propolis. It may be, as friend Manum suggests, that they get their feet, their mandibles, and their bodies so thoroughly stained with the yellow stuff that the wax they work is necessarily stained; and, as a consequence, we have, toward the close of the season, or after it, yellow cappings. And there is still another point to be considered; namely, that these yellow cappings are apt to be near the wood of the section—more particularly at the bottom. Why is this? Is it not because of the proximity of the propolis-daubed wood?

Mr. Smith is correct in saying that new comb just built is always white and flaky, and that after it has been in the hive a while it turns yellow. It may be that carbonic-acid gas in the hive has something to do with it; but I should more think it is due to the stain from propolis. In our foundation work we find that wax very readily takes stain of any kind, especially of dirt.

After writing the foregoing I read the article of friend Cormac, just following. It seems he tried washing-soda or carbonate soda, the action of which on wax would be about the same as that of gasoline. His results were not the same as mine—at all events I am wondering whether he or I drew the wrong conclusions. So I suggest that others try it and report. If Mr. Cormac is right, and if the soda has a different action from gasoline, then we could make No. 2 honey into No. 1. I can scarcely credit it. As this form goes to press before I can get the washing-soda to try, I'll have to let it go for this time.—ED.]

TRAVEL-STAIN ON THE SURFACE OF THE CAPPINGS.

Washing it with Carbonate of Soda.

BY JAMES CORMAC.

In GLEANINGS for Jan. 15 the article of J. E. Crane, "Travel-stain; What is It?" was read with considerable interest, inasmuch as no discussion of the matter has come under my observation heretofore, that I recollect. The writer cites many interesting facts regarding the capping of cells filled with honey, where the bees have incorporated foreign substances with the wax, which has been mentioned heretofore by correspondents, and attributes such to pollen-stains as a large element in producing what is commonly called travel-stain. He remarks, "Every bee-keeper is supposed to know what travel-stain is; but I have sometimes wondered if I do," and refers it to that slight tinge of color we find on or in cappings of surplus combs—slight near the top of sections, and increasing toward the bottom, where it becomes a light cinnamon or yellow or brown. The discoloration is usually attributed to the bees' feet being dirty, which is far from being the cause. As surplus combs are drawn out sometimes from the center, if a full sheet of foundation is used, or near the top thereof if a starter is used, the center or upper cappings being formed before the bottom cells are drawn or filled,

if dirty feet were the cause, that part first capped would present stains as much as or more than the bottom cells, which are the last to be completed on full sheets of foundation and the upper corner cells where starters are used the same, the travel over the center being greater than at the bottom (last built), where the stain is almost always darker, it stands to reason if attributed to dirty feet; but not so. Although foreign substances are often incorporated in the wax, that does not color the comb; and if we lift off a capping from the cell, and hold it up to the light the semi-transparency shows the color of the outside, the same as glass shows dirt, which puzzles the housekeeper, often, to tell which side of the window needs wiping. The color is not in the wax, but on the outside, and is placed there by the bees with care and deliberation, and for a purpose.

All combs when built (they are not drawn) are formed from the scales of wax as excreted by the bee, and pinched by their mandibles till they adhere together. The sides of the cells are porous, also the cappings, and will admit moisture from the breath of the bee condensing within the hive when ventilation is impeded by cold air, and, unless excluded from contact with the honey, would be absorbed and cause the sweating and souring, detrimental as food to the bee. To prevent this the bee varnishes all sealed sections at a time when resinous vegetation is secreting propolis, so called. Unless the cells are reserved for uncapping for larval food there will be no propolizing until very late, and will be slight because of scarcity. There is great difference in the amount of this so-called travel-stain as applied to the combs by different colonies, as well as in different localities. In this prairie country in an early day, say thirty years ago, when much was unsettled, wild flowers were abundant, and excretions of gum or resin were plentiful, so the bees made use of it to excess compared with what is now gathered. Honey at that date was ruined for market by the amount of propolis spread over the combs, it being applied in chunks.

To convince yourself that this stain is mostly propolis smeared on by the bees, and not incorporated in the wax, take some soda carbonate, dissolve it in water, apply the solution to the comb with a soft brush. Now try some propolis scrapings; result, a stain like yellow paint, which will rinse or wipe off from the comb and leave the comb very much whiter—a fair No. 1 section, changed from a discarded travel-stained one.

Des Moines, Iowa, Jan. 20.

RAMBLE 162.

Crossing the Boundary into Oregon.

BY RAMBLER.

Yreka is located in a fertile valley, but it is not much of an alfalfa-growing district, consequently there is no one engaged in the business of bee culture here. About the only honey-production that was ever practiced here

was by an old miner who hunted and robbed bee-trees, and became so proficient in the business that he was known as Honey Jake. Now and then a nice hunk of honey would sell for 50 cts., while a mashed or broken lot would be greatly depreciated in price; but the miners were not over-particular about the mussed condition, for a real lover of honey would patronize Jake whenever the buckets appeared with any sweetness in them. Honey Jake never tried to domesticate the bees. His ambition went no further than to cut the tree or pry open the rocks, secure the sweets, and leave the bees in a forlorn condition.

At Gazelle, on the S. P. R. R., and almost in the shadow of Shasta, we find the noted Edson ranch, upon which are several thousand acres of alfalfa. The Edsons are not only enterprising along the lines of alfalfa and cattle raising, but have established bee-ranches, and make considerable shipments of honey. They are in the ideal condition so much extolled by the cattle-man, wherein they have command of the northern and southern markets. I judge, however, that, if there is any gain in choice of a market, the railroad will take a good share of said profit, for the freight rates from this point are excessive.



I broke away from Yreka about noon, and, with the aid of my wheel, sought to strike the railroad about 18 miles north in time for the north-bound train; but owing to quite a little up-grade, and the necessity of leading my wheel, I did not make Klamathon, the station, in time.

But I did not care a continental. I found quarters in a nice little temperance hotel presided over by several nice sociable ladies of various ages, and I made myself so agreeable, that, in the evening, I was invited out to the only entertainment the town afforded, and that was to the saw-mill. This mill is the

center around which all Klamathon revolves; in fact, it is the life and hope of the town; for everybody works there except the women. The mill was running night and day; and under the brilliant electric lights it was no small sight to witness the rapid manner in which logs were handled and converted into boards.

The immense band-saw would cut its way through a huge log 13 feet in length in just six seconds; in three seconds the log would be run back and set for another cut; then what the ladies called the nigger (a square post with a big spike in one side of it) would bob up through the floor and flop that log over as quickly as you could make three winks.

From the rate they were working that night I reckoned they could saw enough lumber in one day for all the bee-hives bee-keepers will need in California in one year, and a good year at that.

Take it all in all, this entertainment in the mountains, with three ladies to show me around, was much better than a theater, a minstrel show, or even a football game, for which I have a special weakness.

I broke right out again the next morning on my wheel for Ashland, Oregon, 32 miles distant. I had to make this break or wait ten hours for the train, so I broke. I soon came to the mute but eloquent sign that marks the line of division between California and Oregon. I thought it fitting to celebrate the occasion, and carefully dismounted, took off my hat, unfurled the little American flag I had with me, and, with due respect for our sister State, passed into her territory. My respect continued to grow that day until it reached the altitude of about 4300 feet, or, in other words, I passed over the Siskiyou Mountains, and had to walk at least six miles and push my wheel ahead of myself up a steep grade. I had the consolation, though, of believing that it would be down grade on the other side, where I could make up for lost time.

Another feature was highly gratifying. The water, that often appeared in crystal springs or musical rills, was cold, sweet, and invigorating, and I can tell you that Siskiyou Mountain produces the best water I ever drank, and the memory of the refreshing draughts I sipped from every spring and fountain still lingers on my palate.

For at least ten miles that day I passed over the most lonely road I ever traveled—not a house, human being, animal, or scarcely a bird. It was an excellent road for a hold-up; but the fellow who does such things evidently did not expect the Rambler.

I have traveled over and lived in many lonely places; but I hardly ever think of the robbery contingency, and I am more and more impressed with the fact that we have a very good country in which to live, and where the law makes it unhealthy for the existence of brigands.

I have found quite a number of eastern people who look upon any portion of our country west of the Rocky Mountains as a wild and woolly region; and when they come here they tuck a revolver into their grip; but,

my dear friend, if you contemplate coming to California don't waste your money on deadly weapons. You will not need them, and are more liable to shoot yourself than to use them on any other person. People are just as safe on the Pacific coast as they are on the Atlantic side.

I rested awhile on the summit of Siskiyou Mountain, waved my bandana in a sort of imaginative way to the bee-keepers of the south and the east, and then, with a fir-bush trailing behind, went whirling down the road that wound through the tangled wild woods. Acorns were plentiful here, and the only animal I disturbed on the Oregon side was an occasional pig busily crunching and fattening on them. And it was down grade to make you smile—a drop of 2252 feet in 13 miles.



I was quite interested in Ashland, whither I was tending, for it is one of those towns where the late Mr. Levering marketed quite an amount of honey. He employed teams to freight it out from Siskiyou County; but the expense of transportation, the competition of other bee-keepers in Oregon, as well as the low price for which honey could be purchased and delivered from San Francisco, reduced his net profit to a small figure.

There are a few bee-keepers within a few miles of Ashland, and after a fair night's rest I proceeded to hunt up at least one of them. My landlord informed me that Mr. W. C. Myers was a bee-keeper of some local note. "And," said he, "you will probably find him about this time of day at the creamery just up the street." So I hied away to the creamery. On my way I overtook a man who had the appearance of a well-to-do farmer, and I asked him if he knew a man by the name of Myers.

"Why, yes," said he, "I ought to know him, for that is my name," and Mr. Myers and I proceeded to the creamery together.

Mr. Myers is not extensively engaged in bee-keeping. He makes it a sort of side issue. He is one of the most prosperous farmers near Ashland, with an elegant house and commodious barns. I was especially interested in the beautiful Shetland ponies on his ranch. For several years he has made the breeding of these diminutive horses a specialty, his taste running more in that direction than with bees, and, withal, with more certainty of profit.

He has some of the finest Shetland stock to be found on the Pacific coast.

While at the creamery Mr. M. introduced me to another bee-keeper, who was evidently an amateur, for he could boast more in one minute about what his bees could do than Mr. Myers would in a lifetime.

From the few bees kept in the vicinity I should judge that the location is not a tiptop one. Alfalfa is grown here, but it is cut before bees can work upon it. There is white clover in abundance, and sweet clover is getting to be quite plentiful; but it is regarded as an obnoxious weed. If the weather is favorable in the spring, bees ought to do well on fruit bloom, for there is much of it. Ashland is at the upper end of the Rouge River Valley, and all of this region is noted for the excellence of its fruits. Apples and pears from this valley have sold for fancy prices in New York and in London.

Mr. Myers said that, if his bees could work on the poison oak that flourished in the hills a few miles distant, he thought he could get much good honey from it. This oak is a bush growing to a height of six or eight feet; has a profuse bloom, and secretes much nectar; the honey does not partake of the poisonous nature of the tree, but is of fine flavor and color. Mr. Myers had a novel idea of getting his bees to work upon it, but which he had never put into practice. The oak, I understand, is over five miles from his apiary. Instead of moving his apiary into the vicinity he proposed to take a few bees in cages from a number, or all of the colonies, to the hills, and liberate them near the flowers. Finding themselves in the midst of plenty they would fill themselves and convey the good tidings to the apiary, and there would be a general stampede to the new field. Mr. Myers asked me if I thought the plan would work. In my reply I had to infringe upon Dr. Miller's prerogative, and say, "I don't know."

However, in my experience with orange bloom I am inclined to think that, for a honey-producing flora to entice bees a long distance, the field must be large, the odor strong, and the nectar abundant.

Mr. Myers gave me the names of several bee-keepers within a few miles of Ashland, one of whom had about 100 colonies; but the roads needed a high-stepping steed, and mine was not of that kind, so I contented myself with the information given by Mr. Myers, and proceeded down the Rouge River Valley to Medford.

REPORT FOR 1898.

We commenced in the spring with about 275; increased to 325, and produced 3694 lbs. of section honey, 895 lbs. of broken comb, 14,595 lbs. extracted; grand total, 19,194 lbs. This country averaged from $\frac{1}{2}$ to $\frac{3}{4}$ crop, owing to whether or not the bees received the proper attention. We have bought 125 more colonies, and will begin 1899 with 450 to 500, besides a large lot of nuclei.

Hutto, Tex., Dec. 7. O. P. HYDE & SON.



WIDE FRAMES AND SEPARATORS.

Question.—Will you please tell in GLEANINGS why tin separators are not as good as wooden ones or the fence? I am using wide frames with tin separators tacked to them, so arranged that a bee-space is left at top and bottom so the bees can work all through the surplus apartment. Is this not as good as any thing I can have? And can not the separators be cleaned of bee-glue much easier than could the fences?

Answer.—The above-described wide frames and separators are just such as I have used for the past 25 years, and so far I see no reason for changing my surplus arrangement. As my honey has always brought as much as, or a cent or two more a pound than, the highest market quotations, I see no reason why I could secure better prices were I to change my mode of securing surplus. Some of my fancy honey, shipped on commission this last fall to a Boston firm, sold at 20 cents per pound, while 14 to 15 cents was the highest market quotation for the best fancy in that city. One of the great advantages of wide frames is that the bees do not have access to the outside of the sections at any point, except the edges of the horizontal pieces; hence, when filled, they are as *new and perfect* as they were when put on the hive, requiring scarcely a bit of scraping to clean them of propolis, or bee-glue, as our questioner calls it. All that has been said of late regarding section-cleaners finds no place with the apiarist who uses properly constructed wide frames. Yea, more: All the expense required in constructing one of these section-cleaners, or in buying one, is entirely saved by using such wide frames. More still: All the time required in using them can be taken for the improvement of the mind in reading, etc.; going to some summer resort, and hearing some of the best talent in the world; or, if nothing else seems of more importance, the time saved can be used to go camping or fishing, if one is so inclined; and with me, either or all of these seem to meet my requirements better than to run a section-cleaner, and be to the expense of purchasing the same. As to the inventing of a section-cleaner, I have not so much to say; for in such invention of any thing the mind is improved, and a certain joy comes, which is often greater than any which can be experienced in going fishing, etc. I would not discourage inventive genius in any way, for, when used aright, it is not only a help to the world through the invention, but a help to the world also by making the inventor a greater man or woman, socially and intellectually.

As to the ease of cleaning separators, I am not much interested; for, to my knowledge, I have cleaned mine only *once*, and many of them have been in use for from 20 to 25 years. Some years ago I used wooden separators on a

few hives by way of experiment, and, if my memory serves me aright, they were daubed up with propolis to a much greater extent than were the tin ones. But they were not discarded on this account, but because they did not answer their purpose as well, when used in connection with wide frames, as did the tin.

WHEN TO PUT FOUNDATION IN SECTIONS AND FRAMES.

Question.—Would you please let me know through GLEANINGS if it will be just as well to fasten the foundation in the frames and sections during the winter months, while I have plenty of time, as to do the same just before needed, when I am crowded with the summer's work? If I could do so I could have them all ready when the time comes for their use, at a much less cost to me. But I am told that the bees will not accept the foundation as readily where it is put in the frames and sections in winter, as it becomes dry and hard by summer, so the bees can not work on it to advantage. Is this a fact, or only some one's "think so"?

Answer.—During two years I experimented largely in this matter, till I became convinced that all the talk about old foundation being hard and dry, and not worked as readily by the bees, was a fallacy. To be sure, on these cold winter days all foundation does look hard and dry, and any thing but inviting to the bees, or to myself either; but you just wait till some hot day in June or July, and then go up to the attic where it is stored away, or where your frames are filled with it, or sections, may be, then look at it; and if it is not too soft and pliable to handle easily, then your attic and your experience will be different from mine. Why I have alluded to an attic is this: Cold foundation has a whitish, hard appearance, while foundation in a heat of 100 degrees F. has a yellow, oily appearance when it is pliable to handle and inviting to the bees. Now take a piece of the foundation, fresh from the mill, and take it into the cold room, and you will at once say this new is more acceptable to the bees than the old piece you are comparing it with; but take the same new piece into the attic, and hold it by the side of the old, and you will conclude at once that both are alike inviting to the bees. Now take your old, on some cool day in June, when it looks so uninviting, and lower a frame filled with it down into the center of the brood-nest. Leave it five minutes, then go with a piece of that fresh from the mill in your hand; lift the frame, when, presto! the old and the new have become alike again, and the bees have already begun to manipulate it. In other words, when placed in the hive the foundation assumes the same yellow, oily, soft, pliable nature, after a moment or two, that it has in the attic, or when first leaving the mill; and if this is a fact, which I know it to be, will any one tell me why it is not just as acceptable to the bees as the new? Under these conditions no one can tell the new from the old, when the different pieces have been shuffled together, unless either has been marked in some way.

This matter of old foundation not being as good as new is like many another matter which has been started without due consideration being paid to it; and, after being once started, it keeps on its rounds through the papers and on mortal lips, going around and around, as on an endless chain, year after year, decade after decade, till nearly all the world thinks it must be a *fact*. To show that I am not writing one thing while practicing another, I will say that my last two days' employment before to-day, February 14 and 15, has been that of putting foundation in sections and frames, and that said foundation for frames was purchased in 1896, and that for sections in the spring of 1898.

And now I wish to say a word about taking what any one says or writes as an established fact. No man or woman should be *only* an imitator of some one else. Set your *own* mind at work, and it will prove to *your own self* what is right and what is wrong, if you will let your hands obey its teaching by way of doing a little experimenting on a small scale. Don't depend on what Dr. Miller, the Roots, Hutchinson, Dadant, Doolittle, or any one else tells you, unless it is right in line with what you want, and proves as they say under your manipulation. If you want something different from what they do, please tell me what there is to hinder *your own self* trying what you want; and then if it proves, after trial, to be just the thing for *you*, tell the world about it, so Dr. Miller, Doolittle, etc., can take advantage of your experiments, as you have been taking advantage of theirs, all along during the past, and thus shall come a *mutual* benefit to the whole bee-fraternity. Don't be afraid of a little experimenting on *your* part; only take my advice and not go in *too heavy*, for it is needless to sacrifice a *whole* apiary to any single experiment, as many seem prone to think they must, if they experiment at all. Hutchinson would never have been a Hutchinson had he been like a Doolittle, nor a Miller a Miller, nor a Dadant a Dadant. And herein lies one of the *great* blessings of life; for this would have been only a very small world had there been none but Doolittles in it.



WORMS IN BOTTOM-BOARDS; INTRODUCING QUEENS; PLAIN SECTIONS A SUCCESS.

I see by report of the bee-keepers' convention at Omaha that some of the bee-keepers are troubled by worms that get into the bottom-boards of hives, and ask for a remedy. Did you ever try soaking the bottom-boards in lime water?

In introducing queens many persons advise placing the cage with queen therein upon the top of the frames, to let the bees get acquainted with the new queen, while some of the bees eat the sugar-candy plug that is in the cage, and

release the queen. By placing the cage under the frames, and between two of them, there will be less danger to the queen, for there will not be so many angry bees to have to deal with; and when the queen comes up she has her escort of bees with her to look after and take care of her.

One of your customers speaks of the wavy condition of the honey in the plain section, and lays it to the fact of some of the slats being more than the regulation width apart. I find that it is very important that the hives should be perfectly level, both sidewise and endwise. The plain section is far ahead of the old beeway section, and I would not return to the plain separator for any money. Every customer to whom I sell honey remarks, "How fine the honey in the plain section does look!" I have heard nothing but praise for my honey wherever I have offered it for sale this winter.

Cuba, Kan., Dec. 23. WM. H. EAGERTY.

A COMMITTEE NOMINATED FOR APICULTURAL TERMS.

Dr. Miller wants a word (see Straw on page 905) to signify that a colony has a good laying queen. Would it not be well if the doctor would coin or suggest a suitable term whenever such want occurs to him? I doubt if any one could do it better. I remember that, some time ago, he told us that the bee-keepers of France had a name for a hive that had cast a swarm, and he wished that we had one in our language. Almost every day in swarming time I feel the want of such name. At my home we use the term "parent;" but I don't altogether like it. Who will suggest a better? Would it not be well to name a committee of three or more to whom the work of fixing upon suitable names or terms as occasion may require could be referred? If you think well of the proposal, I will take the liberty of naming Thos. W. Cowan, editor of the *British Bee Journal*, for one. I know all British bee-keepers will support that nomination. What do you think of the suggestion?

In another Straw, p. 905, Dr. M. tells us of the cold, and the difficulty of getting his bees into the cellar. Now, doctor, why don't you come to Canada and enjoy a better climate? Nov. 16 it was at 45°, and the bees were flying, and I put in some. On the 18th, although the bees were flying, we rushed them in; the time had come, and for a few days they had been flying freely, and I have been glad ever since.

S. T. PETTIT.

Belmont, Ont.

[I support the names of Mr. Cowan and Dr. Miller; but let them not wait for a formal election, but go right ahead and coin the needed terms.—Ed.]

APICULTURAL NOMENCLATURE.

Dr. Miller sighs for a word like the German word "weiselrichtig," to express the fact that a colony has a "good laying queen." Now, if the word expresses the meaning of the words in quotations it contains as many syllables as the three English words do, and as many letters, less two, and is much more difficult to

pronounce. How do you think it would do to call her a "hustler," a "corker," or a "daisy"? But perhaps friend Taylor, of the *Review*, would object to such expressions as being contorted words.

I'm with you in the matter of boiling foul-broody honey. Mercy! Boil two hours, and yet frisky! I could cook a crow in that time.

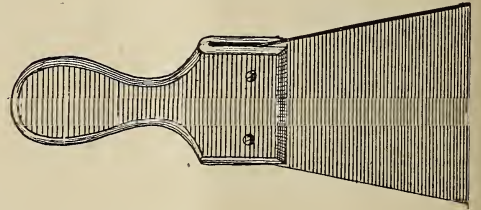
Hospital, Ill.

W. M. WHITNEY.

[We did not understand that Dr. Miller advised the use of the German word itself, but another one as succinct in meaning as that. It would be difficult, probably, to find an English word that would express so much in so short a space without resorting to an arbitrary expression or mark, such as O. K., meaning that the O. K. (Old Kween) is Oll Korrekt—in other words, that the colony is properly mothered.—"W. P."]

HANDY TOOL FOR THE APIARY.

In GLEANINGS for May 15, page 400, you write about a tool for separating supers, etc. I send you a duplicate of a tool I have used for years, and found to fill the bill entirely. It is handy to scrape wax and propolis from any part of a hive, using it like a shovel—shoving from you. It is handy for separating frames, and taking off the cover or a super. For me it is strong enough to loosen and part-



ly raise an eight-frame extracting-super with 40 pounds of honey. The blade being thin and wide it can easily be pushed between the super and hive, and it will not make a mark on either of them. It will also serve as a paddle to strike down an irritating bee when it becomes necessary to do so. But the proof of the tool's value will be found in trying it.

J. F. EGGERS.

Grand Island, Neb., July 11.

PLAIN SECTIONS AND OLD-STYLE IN THE SAME SUPER.

I tried a little experiment last fall. I took one Ideal super, and put in half with Ideal sections and fences; in the other half I put the 1½ sections and slotted separators. Both kinds of sections were partly drawn comb that had been extracted from. The case, when taken off, contained 15 well-filled Ideal sections; 5 of the 12 1½ sections were filled; the other 7 were from two-thirds drawn to nothing. So much in favor of the Ideal. I recommend the Ideal to every new bee-keeper, and old ones too, as the best-looking, easiest-cleaned, and best-packing section in use.

THAD. H. KEELER.

South Salem, N. Y., Jan. 14.

CENTRAL CALIFORNIA AS A BEE COUNTRY.

This is not an advertisement, and there is no more room for the bee-keeper who is seeking location; but Central California is about as favored a locality for the honey-producer as there is in the State. We always get some surplus, and at times more.

Hanford is our largest city, and is the business center of the Central California Bee-keepers' Association, of which there are four yearly meetings held each year, with good results. We find that it is an easy matter to produce honey; and it is also quite easy to get rid of it. But the way that the most of the bee-keepers have been disposing of their product has been more profitable for the San Francisco man than for the bee-keeper.

But the organization of the bee-keepers into the association has proved very beneficial to the producer, and the commission man has been compelled to share at least with us.

Our honey-producing territory is small in this vicinity; and if we get 20 cars of honey to the season we do quite well; and in a dry year like the one just past we fall short of that number, and get from 12 to 15 cars.

Our range consists principally of alfalfa; but there are many other plants that yield well in their season. The bee (or Spanish) clover is getting a good start in this part. The honey is equal to that of the alfalfa. The goldentop is a good producer of honey, and makes its appearance each wet year. The honey is what I call a bright amber color.

At this writing, Jan. 16, our bees are gathering pollen from alfilaria, and next month we expect a little fruit-blossom honey; so by the first of March they will be in good condition to begin gathering honey to build up for swarms and the alfalfa flow.

The long-looked-for rain has come to a part of the State; but it has not given us much here, yet the clouds hang heavily about. While it was raining elsewhere it was storing up the snow in the high Sierra Nevada Mountains, and that will be of untold value to us next summer, as we here in this part depend on irrigation for the alfalfa, and hence the honey.

The ten-frame hive is universal here, although I have tried the eight and also the twelve. I find that the latter is just the size for the mountains, as there it is often that the honey-flow is over by the first of July, then there is a long spell when there is no honey; and if a small hive is used, the stores will not be sufficient to run them through until another spring. But here in the valley we have no fear of such, and the ten-frame is large enough, while we think that the eight is too small for a good brood-chamber. F. E. BROWN.

Hanford, Cal., Jan. 16.

OUTLOOK FOR CROPS.

This year promises a better crop than 1898. While a few localities in the San Joaquin Valley enjoyed a splendid honey-flow, several producers clearing about \$2000 each, perhaps over that amount, it is an open secret that the average was very poor. Regardless of the dry-year prophets, we are having a warm win-

ter with considerable rain lately—as much as 25 to 75 tons of water falling in a day on an acre of land. Grain is mostly in, and plowing is the order of the day. Nearly all plows have seeder and harrow attached.

GLUCOSE.

The U. S. B. K. Union could accomplish few things of more importance than ruling glucose syrup compounds out of the market, if my judgment is worth any thing. There is a vast amount of such syrup sold on this coast. They compete with extracted honey very directly, and glucose hurts our business just as severely when sold as syrup as when called honey. I don't object to running my bees in competition against honest syrup, but they are unable to make much headway against the common adulterated stuff.

THE DOOLITTLE HIVE.

This is not admired so much as formerly by Mr. Doolittle in comparison with other hives, it seems. A nine-years' study of hives convinces me that a ten-frame L. hive will give better results with his management than the hive he uses. Doolittle's management is not possible in a large business. He coaxes uniformly good results where the range admits of it, as his does. The man with several hundred colonies in several locations must have what I call a "let-alone hive," such as the Dadant or the ten-frame L., when run to extracted honey, to be as much as three stories high.

The Heddon is a "coaxing" hive. The various manipulations necessary to achieve the greatest success can be done "with a motion," Mr. Heddon says. However, the "motion" may be seriously needed when you are several miles away at another apiary. To have a splendid location, and keep enough bees in one location to make it a fair business, no other hive would suit me so well. It is a difficult hive to make properly. As nearly all apiarists are trained to Langstroth management it is quite an undertaking to train a hand to the Heddon hive, especially when he shows his disgust at the start by pointing at the hives and saying, "Them things!" To me the question is still open, "Will it not pay to use a let-alone hive and do all the judicious coaxing you have time to?"

IMPORTING QUEENS.

Being convinced of the superiority of the ordinary Italians over mongrels (improperly called hybrids by many), last year I concluded to import some queens. Of six queens started from Italy, four died before reaching me; lost one in introducing; the other one, and almost all the bees in the hive, absconded several weeks after she was introduced. Late-ly a friend told me that daughters of imported queens frequently abscond with their families. My experience of last year has convinced me that it is cheaper to send to the Eastern States and buy of importers than to send to Italy direct from California. Twenty days on one trip is very trying on both queen and retinue.

W. A. GILSTRAP.

Grayson, Cal., Jan. 11.



J. M. H., Ohio.—Paraffine can not be mixed with beeswax in any proportion to make a foundation that will answer in the hive. Nothing but pure beeswax can be used in the hive. Even a slight mixture of paraffine will cause combs to melt down.

J. N. P., Colo.—Notching a rabbet at intervals to regulate spacing the frames is a very old idea. It has been used by a good many different ones; but all, so far as I know, with but one exception, have discarded it. You can best see the objection by fitting up a sample hive and trying it.

F. J. C., Ida.—Several years ago we sold what we called our metal-corner frames. They had knife-edge bearings, and carried out just the idea that you show. We finally abandoned them entirely for the wood projection, as the metal edge was liable to get bent, cut the fingers, and, worse, allow the frames to slip around too easily.

J. H. J., Pa.—You can use perforated zinc between the upper and lower stories of a colony for extracted; but if I were doing it I would not use it. There is a certain advantage in letting a queen have the range of both stories, particularly in the matter of keeping down swarming. If I used perforated zinc at all I would put it on top of the second story; then add a third one for extracting purposes only.

A. F. R., Ohio.—You would be pleased with the late edition of our A B C of Bee Culture. The present one contains over 400 pages, and three times as many illustrations as the old book. In answer to your question as to what I understand by brood-chamber, I would state that, technically, it means that part of the hive in which only brood is reared. When we speak of supers we mean that portion of the hive above the brood-chamber, and which is used for the storage of comb or extracted honey. The glossary of our A B C of Bee Culture will give you very full information on all of these different apicultural terms.

F. M. C., Cal.—In regard to a special breeding-queen, I think I know what you want, but fear we may not be able to select such a queen for you until along in the middle of the summer, and then select her from a number of others of the very best queens. This might make her worth something like \$25. I hardly think any queen is worth that much money. My advice would be to buy four or five good breeders, paying for them anywhere from \$5 to \$10. Breed from all the queens, and you will thereby get a composite stock that will be better than if you breed from one queen only. Of course, these \$10 queens should come from different breeders. This will avoid in-and-in breeding.

J. A. B., W. Va.—As to soaking honey-combs in carbolic-acid solution to kill foul-

brood germs, I do not know that any one has ever proposed the plan. But I feel certain it would be very risky to rely on this disinfectant. I do not believe that carbolic-acid solution in the proportion of one to five hundred, as recommended by Cheshire, is of any use at all. In the scientific tests we made a few years ago, we placed living germs in such solutions. They were then put in pure-culture tubes. After a day or so new growth developed, showing that they had not been killed. I would as soon think that a good soaking in soap and clean water would kill foul brood as soaking in the carbolic-acid solution. If your experiment proved to be successful, it was the process of *cleansing* and not any supposed disinfecting properties of the acid.

G. W. C., N. Y.—You do not specify just how near the highway the proposed location of the apiary is. Ordinarily speaking, I would not have them nearer than fifty yards; but if you do, a high board fence between the bees and the road would enable you to keep them within ten feet. The fence ought to be about eight feet high. This would compel the bees to fly high enough to avoid passersby. I would also get rid of all black and hybrid stock, and keep only gentle Italians. I would also make it a point to see that there is no robbing allowed. Honey should be taken off, or the most of it, before the robbing season commences. Referring again to the matter of a high board fence, I meant to state that it will be worth all it costs as a protection during spring and winter—especially so if the fence should happen to face the prevailing winds.

N. P. A., N. D.—I can not say why honey candies earlier some years than others. In a general way, cold weather is liable to cause liquid honey to granulate. Some seasons one kind of honey will granulate earlier than usual. This may be caused by the fact that the honey is not as thoroughly ripened by the bees. Generally speaking, good thick extracted honey, brought to a temperature of 180, and then sealed while hot, will remain liquid for a considerable length of time, provided, however, that it is kept stored in a room near living temperature. We have had samples keep for us this way in bottles three or four years. While some honey might keep liquid this way, others would candy perhaps in six months. The honey that I refer to was a fine quality of extracted clover.

Some prefer section-holders and some T supers. We prefer section-holders ourselves. The section-holder bottoms we now make are a little heavier, and we do not think they will sag so as to make any trouble.

Regarding Hoffman frames, I will say that there are localities in which propolis renders them a little objectionable, and yours may be one of them. We therefore recommend, instead, our staple-spaced thick-top frames, for particulars of which see catalog we are sending you. These frames have given satisfaction wherever they have been used, and in your locality they would be more easily handled than the Hoffman.



THE subscription clerk says the new names are rolling in at a rapid rate. For all this we are grateful. The larger our list, the better, of course, we can make our journal.

THE average bee-journal of the day contains several kinds of matter. One will be a department of short items; another, general articles; another, extracts from letters; another, editorials; and still another, reports of conventions; but in this issue we introduce a rather novel feature, and that is an interview, or what might be called an unconventional convention of two people.

THE department called "Afterthought," by "Cogitator," now running monthly in the *American Bee Journal*, is a good one, and is a real addition to the Old Reliable. But methinks I know who it is that cogitates—yes, I will bet my old hat against York's that I can name the man, simply by the earmarks of his bright breezy paragraphs. Bet? "You bet" I do when I am sure of winning, and have a good man to bet with.

QUITE a number are asking at this time of year what to do with colonies that are afflicted with dysentery. I do not know any thing to do with them but to let them die. Confining the cluster to fewer frames or uniting two or three of them together may help some. But somehow they disappear all the same whether in one or several clusters. The only cure is *continued* warm weather. In this latitude we shall not have settled warm weather for a month yet.

SHIPPING-CASES IMPROPERLY CONSTRUCTED.

A LETTER from one of our leading commission houses urges upon bee keepers the great importance of having shipping-cases with no-drip strips in the bottom. It further urges that the covers should *not* be let down in *between* the sides or ends of the cases, but they should be as long as and wide as the case, sitting down on the edges flat, held in position simply by nails. When the cover is dropped into a recess in the case, it is often necessary to split the case to pieces to get at the goods.

So far as I know, the leading manufacturers of bee-keepers' supplies are making the shipping-cases as they should be; that is, they have "no-drip cleats," and the cover lies flat on the case. It is those who attempt to make their own cases, trying to "improve" them, that send out cases of the kind condemned.

THE EVIDENT SIGNS OF THE GROWTH OF THE BEE-KEEPING INDUSTRY.

REFERENCE is made in the *Bee-keepers' Review* to the fact of Bro. York's having printed 15,000 copies of one edition of the *American*

Bee Journal, and both Mr. York and Mr. Hutchinson seem to be of the opinion that this is the largest edition of any bee-paper ever published. I have just been looking back over our record, and find we printed single editions of 15,000 of GLEANINGS in April, September, and December, 1895, and later on (I can't find just the record for it) we published an edition of 30,000. This present issue happens to be another 15,000. As the call for sample copies has become large we have been obliged to make this extra number in order to supply the demand. I do not say this with any feeling of "go you one bigger," but refer to it because it may be interesting to bee-keepers to know that our industry calls for such large editions of the different bee-papers. The subscription-list of GLEANINGS is growing rapidly. I understand that the lists of the *Review* and the *Amer. Bee Journal* are also growing. All of this betokens the growth of the industry, and general prosperity among bee-keepers. Another fact is interesting: Two or three years ago there were only three or four supply factories, and now there must be a dozen. All, or nearly all, are working on full time, and several over time, and this in spite of the fact that honey is coming down in price, and glucose has been pushing its way into prominence at a fearful rate. It only goes to show that honey is becoming more and more a staple. Ten years ago it was accounted a luxury, and was put on the table when the "folks had company." But now, if it is used at all, it is on the table every day, and is eaten just like any other sauce.

A HONEY-LEAFLET IN THE FORM OF A HONEY-LABEL.

ONE of our subscribers, referring to the fact that the honey-leaflet did not seem to increase his sales, went around among his customers and inquired whether they read the leaflet or not. Those who did look at it at all said they did not place much confidence in its recipes, as they thought it was a sort of "patent-medicine affair." Why did they think so? simply because there was a doctor's name attached to it! That is a good joke on Dr. Miller—to think of his being styled a patent-medicine crank!

When the question of the honey-leaflet came up in the first place, it was my purpose to prepare the matter myself; but there was Dr. Miller, who, I thought, knew more about the general subject-matter than I; and that he, being a *doctor*, you know, his *ipse dixit* would have some weight.

But this same correspondent hints at an idea that may be worthy of adoption; and that is, putting the general facts about honey on the honey-label, and then, if there is room, put on the honey recipes. Such a label would necessarily have to be large; but in the case of nearly all extracted-honey packages, especially if of tin, the label should go clear around the package, and lap. This would give room enough for the general matter.

WASTED AMMUNITION.

Another subscriber, a lady, writes that it

is useless to throw the leaflets on porches, or throw them broadcast anywhere. Wasted ammunition really does more harm than good. She is very careful about the distribution of her leaflets. If she hands one out she draws attention to the value of the honey recipes, and to the interesting matter regarding honey and its production. She also mails a leaflet to all her customers, at the same time adding a word to the effect that she has the right kind of honey—the very kind that is described in the leaflet itself.

WHAT'S THE MATTER WITH HOLTERMANN?
PREJUDICE OR CARELESSNESS—WHICH?

In the December issue of the *Canadian Bee Journal* appeared a general criticism of plain sections. Referring to a statement in our catalog, that the new sections, when filled with honey, would bring a higher price because they are better filled out, Mr. Holtermann said:

If this can be done, how is it that at Toronto, London, and Ottawa exhibitions the plain sections did not distinguish themselves by capturing the prizes on comb honey? The comb honey in the plain section was shown at Toronto, but secured nothing.

Our readers will remember that I referred to this in our issue for December 15th last. While I did not deny his statement I was surprised, because plain sections had held their own, and more than that, at other shows. Soon after GLEANINGS was out I received the following letter having reference to Mr. Holtermann's statement above:

I might say here that I gave the no-beeway sections, $4\frac{1}{2} \times 4\frac{1}{2}$, a trial this season, and I am well pleased with them. I used about 1200 of them alongside of the open-end or slotted section, $4\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$, with plain separators. This winter I am changing all of my supers to no beeway. I find that I can get from $\frac{1}{2}$ to 1 cent more for no-beeway in the Toronto and Kingston markets. I sent 12 sections to Mr. Hill, one of the officials of the Toronto exhibit, and paid my footing and express both ways. I called unexpectedly at Toronto the last week of the fair, and my honey was still in Manager Hill's office, not opened. I opened it, and showed it to Mr. Holtermann. That is the no-beeway that did not take the prize that he has so much to say about in the *Canadian Bee Journal*, and I am positive there were no more, for I looked very closely, and asked two of the honey-exhibitors if there were any, and they said no—that they wished there were. Mr. Holtermann is a friend of mine—that is, a business friend—but I like justice in all things.

C. E. TAYLOR.

Harrowsmith, Ont., Can., Dec. 28, 1898.

This letter I referred to Mr. Holtermann for an explanation. After some correspondence it was agreed that he was to make suitable correction in his own journal; but when in his next number he attempted to excuse himself rather than make a full correction, I was surprised. This is what he says:

In my article on plain sections I did not mean to say that honey in plain sections had been shown at the leading fairs, but that, if it had produced so superior an article, why did it not take some of the prizes at those fairs? Again at Toronto, plain sections were entered and sent to the exhibition. I saw them there, but through an oversight they were not judged. Yet they simply were not in it for best-filled and cleanest sections. Although it would have been better to make this explanation, it did not occur to me to do it, as it did not affect the position as to their merit.

Mr. Holtermann says they "were entered and sent to the exhibition;" that he "saw them there," as if he were *still* trying to convey the impression that they were *on exhibi-*

tion, as, forsooth, he "saw them." To this Mr. Taylor says they were in Manager Hill's office when Mr. Holtermann "saw them." Mr. H. says, again, "Through an oversight they were not judged." Not judged? How could they be if they were shut up in the box they came in from the express office in "Manager Hill's office"? And was the "oversight" in not judging or in not opening the box? And even if they had been judged, he says they "were not in it." Mr. R. F. H.'s prejudice is so apparent in this case, that, if he had been judge, they would not have "been in it," that's sure.

Here is what one of our correspondents, referring to this same attempt at explanation, says:

He doesn't admit that he said any thing unfair, when he before said practically what was both unfair and untrue. He now says plain sections were entered and sent, but not judged. Why doesn't he say they were not exhibited? If he were entirely fair he would have said something like this: "I said in a former number, 'The comb honey in the plain section was shown at Toronto, but secured nothing.' That was incorrect. The truth is that honey in plain sections was *not* shown there, and had no chance to secure recognition, even if it had been twice as good as any shown." Indeed, if we may indulge the hope that Mr. Holtermann is entirely truthful, there is no power that can prevent him from saying so yet, at the earliest opportunity. And what explanation is there for their being where they were privately seen (if I have the right idea) by Holtermann and others, and Holtermann, in the interest of fairness, didn't see that they *were* exhibited?

I can not think that Mr. Holtermann meant to deliberately misrepresent or to act unfairly; but prejudice or carelessness, seemingly, has so warped his memory that he failed to set forth the facts as they were—that is, if Mr. Taylor's version is correct. I have letters from others, stating that there were no plain sections on exhibition at Toronto. We are all liable to unconscious prejudice or mistakes; but when they are once pointed out, one does not lessen his self-respect by "acknowledging the corn."

THE NATIONAL BEE-KEEPERS' UNION.

A REPORT has been sent to the members, showing the result of the last election. Only 76 votes were cast in all. Out of this number General Manager Newman received 71; and R. L. Taylor, for President, 44; but both Mr. Taylor and Prof. A. J. Cook "positively decline to accept any office" in the Union; and General Manager Newman says: "I feel that, in justice to myself, this must be the last time that I can accept the office. . . . I would cheerfully give counsel at any time, or accept a position on the Advisory Board, or take the office of President." When two of the main props of the organization decline to accept office again, and when its General Manager himself says that this must be the last time that he can accept the office, it would seem, in my humble judgment, that now is *the* time to marry the weaker to the stronger, the United States Bee-keepers' Union. Thomas G. Newman, with his long experience, would be a valuable member of the Board of Directors; and now that the new Union has 465 members, and is in a flourishing condition, it would seem as if this were the very thing to do. I

make this suggestion with no feeling of exultation over the waning strength of the old Union, and of its probable demise, but on the score of economy and expediency.

That old war-horse, who has truly rendered such valiant service in the old Union, should certainly be an officer in the new organization. For fifteen years he has been at the head of the old Union, being unanimously elected each year. As he is growing in years it is not a wonder that he should feel that he has done his duty.

But amalgamation can not be effected by "mere talk" on the part of bee-journals. Those who are officers of one organization are, in part, officers of the other. If the Advisory Board of the National and the Executive Board of the U. S. B. K. U. recommend amalgamation, then the question can be voted on at the following elections of each Union.

It seems to me simple, easy, and the only thing to do.

FOUL-BROODY HONEY; HOW LONG SHOULD IT BE BOILED TO RENDER IT STERILIZED?

SOME little time ago, as our readers will remember, Dr. Miller criticised my statement to the effect that only a few minutes' boiling would be necessary to kill the germs of foul brood in honey. In this opinion I was backed by R. L. Taylor, who has had a very large experience with foul brood. But Dr. Miller, nothing daunted, finally confronted me with the names of several scientists; among others, that of Dr. W. R. Howard, of Fort Worth, Texas; Bacteriologist J. J. McKenzie, of Ontario, Canada, and a Frenchman by the name of Genonceaux, whose experiments went to show conclusively, in his opinion, that boiling honey even 45 minutes did not necessarily kill the spores of *Bacillus alvei*. He further stated that they found that in some instances it required even two and a half hours to render honey tainted with the microbes of foul brood innocuous. This staggered me somewhat, but I was not then willing to give up, because I insisted that practice was at variance with science; that I never knew of a case where honey from a badly affected colony, boiled only a few minutes, ever gave rise to the disease in a healthy colony fed with it. Then I offered this challenge: That, *if* there was *just one instance* where a practical man found that a few minutes' boiling was insufficient to kill the germs, I would give up. This challenge was accepted by J. A. Buchanan, a man whom I regard as careful and conscientious. He placed before me (see GLEANINGS, page 48) a certain array of facts from his own experience that convinced me that the scientists were right. Later on, a letter from another bee-keeper confirmed the statement made by Mr. Buchanan, but this letter has been mislaid, and I have not been able to find it, so I can not present it to our readers.

Critic Taylor, of the *Bee-keepers' Review*, after considering all of this, characterizes my change of front as "hasty and ill considered," that "the evidence" of my own "senses" is "a thousand times better than that drawn from some case of which nothing is known

concerning the care or skill used." He calls attention to the fact that scientists are not infallible, and in evidence of this he refers to the discussion of years ago on the question of spontaneous generation—a theory that has since been thoroughly exploded; and, moreover, he is surprised that I should so hastily recant my former opinion "without raising any question of skill or care on the evidence of this single case."

Of course, Mr. Taylor did not know of this other letter, not published; and my own excuse for a change of opinion is that it is safer to err on the side that a few minutes' boiling is insufficient; that, if there was any possible doubt (and I certainly think there is good ground for it), we should take that side which we *know* to be safe, and I therefore felt impelled to recommend a boiling of at least three hours.

I have just reread the article by J. A. Buchanan, of whose "skill and care" in making the experiments under consideration Mr. Taylor has some doubt. To me there is every evidence of precaution on his part. If he were a bee-keeper comparatively unknown we might accept his statements with a grain of salt. But he is an old bee-keeper of considerable prominence, and one whose opinions I have learned to respect. But Mr. Buchanan is backed by that one whose letter I have mislaid, and by the three scientists. And it is worthy of note that these three men of science live in three different countries, one of whom, at least, was, I believe, entirely ignorant of the work of the others. As their scientific experiments are backed by the actual experience of one (and possibly two) practical bee-keepers I believe I was wholly justified in recanting in the wholesale manner I did.

Later.—Since writing the foregoing I have found two articles that I think explain *why* boiling in one case 10 minutes may be sufficient, and why in another 40 minutes may not be enough. I'll give them next time.

REPORTS FAVORABLE IN REGARD TO WINTER-ING.

RIGHT after our last issue was out, the one in which I expressed fears that the prevailing low temperature throughout the country would be the means of killing half the bees, warm weather came on—so warm, indeed, that the bees in our locality had nice cleansing flights. Up to date we find we have lost only three colonies, out of a total of 252 colonies. The rest are in ordinarily good condition. But reports from all portions of the country are uniformly favorable; and the only reason I can assign why the bees did not die off worse is because a change of weather came *just in time* to give the bees a chance to turn over—i. e., seek a new position on the combs. The cold spell, as severe as it was, did not continue long enough to do much damage.

IN our last issue we promised to give in this number a letter from Mr. Uglov relative to getting *Apis dorsata* from the Philippines; but our space is so crowded that we shall have to leave said article over till March 15.



Thou shalt not avenge, nor bear any grudge against the children of thy people, but thou shalt love thy neighbor as thyself.—LEV. 19:18.

If you kick a bee-hive the inmates all together sally out to protect their home; and, as a general rule, if you injure any single inmate of that hive the rest behave themselves exactly as if they individually had been bruised or ill treated. If anybody should hit you a blow on your foot you would be as ready to resent it as if that person struck your hand or even your head. In fact, it does not matter particularly where he hits, so it is some part of your body. You resent and resist damage to any member—*toe, finger, tooth, or eye.* Well, now, the bees behave a good deal as if each individual bee was in a like manner a part of every other individual bee in the hive. And that is right. We admire that very trait. In fact, a very high grade of patriotism prompts every citizen of the United States to rush forward when the life and liberty of any other citizen is threatened. If an American in foreign lands is misused, every American here at home resents the indignity as if he himself had been insulted or injured. Some foreign nations have found this out to their cost. This trait may not be particularly American, but I think it is largely so. Now, if we could expand this so as to cover all humanity, then we should come into that broad open field where the Savior stood while he was here on earth. He loved his fellow-men, *all* of them. We are not told that he ever made any exception, unless it was that he gave his life more for the poor and downtrodden than for the rich and the noble. When we love our fellow-men as in the text above, then we are Godlike. Of course, it comes natural for us to feel a little more responsible for the members of our own family—for the children of our own home; and as a band of bee-keepers I think it is right and pleasing in God's sight to see us unite together to protect our common interests. I think God is pleased to have us exhibit the little trait that I spoke of in the outset. If any bee-keeper is wronged, all other bee-keepers ought to be interested, and ready to resent that wrong.

In our issue for Nov. 15 I told you how bee-keepers, or some of them, were being robbed; and the editor of the *American Bee-keeper*, in a recent issue, offers to be one of a hundred who will give one dollar or five dollars to prosecute the men who managed to get Edward Smith's honey, and who have as yet refused to pay a copper for it. I am always glad to see that spirit, for it is the right one. The Bible says the way of the transgressor is hard; and when we assist in making it hard, we are helping the great God of the universe to carry out his righteous laws. Permit me me to say that these two men—Roe and Robie—have never yet been heard from in any

shape or manner. We have exhausted all of our resources, and can not get them to answer. In a recent issue of the *Progressive Bee-keeper* this man Robie received quite a favorable write-up; but the person who did so, of course did not know him, and the editor of that journal had not noticed our warning under the title of "Robbing Bee-keepers." When I called friend Leahy's attention to the matter, he expressed a readiness to do all in his power to have such matters righted; and I think there is not a question but all the bee-journals will heartily co-operate in holding up to scorn (if we can not do any thing more) all those who are robbing bee keepers by taking their honey and giving nothing in return.

Now, some of the friends may protest and say that friend Robie has probably had bad luck, and can not pay the account. If so, why doesn't he say so, and ask for a little more time? Or if he is so exceedingly unfortunate that there is no prospect that he will ever be able to pay, let him say that he asks to be forgiven for the wrong that he has done. But he is the editor of an agricultural paper; and if he goes on unrebuked he may damage a good many more honest hard-working people—perhaps unfortunate people like himself.

And now this whole matter of collecting accounts comes up before us. What is the right and Christianlike way of proceeding? To cut it short, "what would Jesus do?" If a man is absolutely unable to make even a small payment on what he owes, of course no Christian man or even a good and fair man, would distress him *needlessly*. But if this person proposes (or does without proposing) to continue to get things from others whenever he can do so without being arrested, then he should be stopped by warning people against him or by making him trouble.

There is another phase of this matter that I fear is often overlooked. A little incident will make it plain. A certain kind of coal was going off rapidly from one of our coal-dealers. It went off in the night, and they tracked it and found it in a certain man's shed. No other dealer in town had that kind of coal. The man who had been stealing it nights owned up; but instead of feeling sorry he said he would do the same thing again before he would freeze—that is, if nobody would furnish him work. Well, some might think this sounds very well, and that it is a pretty fair excuse. But the coal-dealer was also a poor man, comparatively. During the severe weather he had sold coal on credit, and to people who perhaps could not pay, until he was in danger of being something like the man who claimed that it was right for him to steal so long as nobody would give him work.

There has been a good deal said about the sins of *rich* people. I want to speak of just one of the sins of poor people. This man laid the blame on the coal-dealer because he could not get work, and tried to make it appear that the coal-dealer alone should furnish his coal. Now, no one thinks of claiming for a minute that a man should starve or freeze without doing something. In this case our town would have gladly and willingly supplied him

with food and fuel, and the burden would have been borne on the shoulders of a great many, which is the right and proper way to relieve suffering. But the trouble is, the man who was not too proud to *steal* was too proud to "go on the town." I know I am getting on to delicate ground; but it surely is not right that one man, and a poor man at that, should support people who say they can not get work. It should be done by the community at large—by his own friends and neighbors. Our county has a large fine farm, with beautiful brick buildings for the accommodation of our county poor. Nobody wants to go there. A poor old lady who depended on a sewing-machine for a living, during the past winter could not get work. At length she suffered from lack of food and fuel. The neighbors, one after another, took care of her; but the final decision was that it would be better for her to go to the infirmary. There she could have plenty to eat, and a nice warm room, and could use her sewing-machine to good advantage in helping the matron, the manager's wife. She declared she would starve or freeze before she would go to the "poorhouse." The manager's wife finally came after her herself, told her she really wanted somebody to help her with a sewing-machine, and agreed to pay her wages. But she would not go, even then. In fact, they were almost obliged to use force. I do not know but most of our readers would say, "Poor woman! I do not blame her a bit." Well, there is certainly no objection in the world to keeping such a person from the infirmary by donations, or, better still, hunting up work for her. But most people will find this a pretty big job, to keep hunting up work for somebody who either can not or will not hunt it up for himself.

During the past winter there have been great numbers of people seeking work. They have offered to work at any price, and at any thing—at least, many of them have. May I be pardoned for just a little divergence just here? In a great many cases where people are out of work, intemperance has had something to do with it. In the first incident I have mentioned, I think intemperance may have had *all* to do with it. In the case of the poor old lady this was, of course, an exception. But right in our town, when so many people were hunting something to do, a man has been getting absolutely *rich* by selling liquor on the sly; and his riches came, too, perhaps, principally from the poor and destitute.

Now, in this land of ours, especially in the prosperous farming and manufacturing localities, no one should suffer from a lack of food or fuel unless it is those who *can* work but absolutely *will not*. It does not hurt my feelings at all to see such people suffer. In my travels through our own and other States it has rejoiced my heart to notice the beautiful buildings and grounds furnished by the people for the county poor. A little more than a year ago I described the county house and grounds of Belmont Co., Ohio. Well, now, is it not a false pride that prompts any one to say, "I would suffer or steal before I would go to the poorhouse"? If you have some

ability, but not very much, why not go and help the manager or his wife? At our county house there are some nice people, and quite able people. Some of them I rejoice to call my particular friends. They assist the manager in looking after those who are more unfortunate. The farm is a nice thrifty one, well taken care of, underdrained, and is growing splendid crops. Since they have put up the new buildings it is a handsome and comfortable place to live. Aside from this, I believe many counties have a plan of letting people stay at home, or with friends, and giving them a little assistance, say during the winter season. Yes, our own infirmary goes so far as to furnish *tobacco* for the comfort of the old people; and when one of the inmates asked if he could have the money instead of the tobacco there was quite a little debate before it was decided that he could draw regularly the value of the tobacco if he would break off and go without it. He came to me one day looking very happy. He had on a pretty fair-looking suit of clothes, and said he had saved his tobacco-money until he had enough to take a visiting-trip off through the country to see his old friends and distant relatives. May God help us to look after the poor and unfortunate in just the way that Jesus would do if he were in our places! May this love, of which I am sure we all have more or less, for our fellow-man, prompt us to let it be general and wide. Perhaps I should say *generous and wide*. Let it not stop at age, sex, or color, nor any thing else. Let us love all our neighbors as we love ourselves, with a consistent and rational love. We have all decided—or if we have not we will some time—that giving money outright is not a very good way. When we discover that some family or person is suffering for fuel or food, supply the deficiency at once, no matter if it takes all the spare change you have. Then state the case to your friends and neighbors; tell them what you have done, and let a large number bear the burden. Then hunt up employment for them. Of course they will, at least as a general rule, prefer employment to money given outright. I suppose every town has an organization that makes it its business to look after things of this sort. The King's Daughters are doing a grand work; but I am really afraid the King's *Sons* are lacking a little.

But let us now consider a little further this matter of robbing bee-keepers. I think that, if the bee-journals act in concert, with the help of their subscribers, they can largely do away with this matter of swindling bee-keepers out of their honey; at least, we can look after persons who are permanently located. Snide commission men who manage to get hold of honey and other products, and sell them and "light out," can not very well be hunted up. But we should all be very careful about trusting anybody who has not a record in the past, and is not quoted by the commercial agencies. I have been studying a good deal as to what should be done with Mr. Robie. He had by far the larger lot of the two. What should we as Christians demand of such a man? Well, I think it will do him good, and do us

good, to insist upon a reply of some sort. The example of such men is bad. If he has some arrangement in mind whereby he expects to pay friend Smith, let him tell us of that arrangement, and we will give it the same publicity we have done in showing him up; and when he pays the account, or any part of it, we will also publicly give him credit; and the sooner it transpires that every man who plans to swindle bee-keepers understands that he will be promptly shown up by the bee-journals, the sooner will such swindlers hesitate before they undertake a thing of this kind. Another thing, we want to do away with all of that stripe of commission men who can not afford a postal card to write to their customers, and tell them what progress they make in selling their honey. The commission man or dealer who solicits honey, and then waits a long while before he says any thing after he has received it, should also be shown up. Of course, every person should be given every opportunity in the world to defend himself before giving him publicity. There is no nobler work in this world for any one to do than to *discourage* selfishness and selfish greed in every way in his power. Let us use mild measures first. Let us exhort and entreat. But when neither of these avails, then let us use *law* as well as gospel.

There is another point I wish to take up before closing. Average humanity seems to have a dislike to writing letters or even postal cards. Oh how many troubles would have been saved if somebody had just used a postal card and a pencil, and told us long ago what he finally told at great length after we had sent his account for collection, just because we could not get any scrap of information from him otherwise!

Most of our readers know that GLEANINGS is continued without orders until we are told to stop it. We do this because so much the larger part of our readers prefer to have us do so. Just think of it! between 200 and 300 have had GLEANINGS right along for 25 years. Should we stop sending our journal to one of these friends without orders to do so, there would be a protest in a hurry. Some will say, "What did you stop my journal for?" another, "I would thank you, sir, to keep my journal going until you have orders to stop it. You have money to my credit on your ledgers, and you *know* it." It happens, however, that the subscription clerk does *not* "know it," unless the person tells her that such is the case. Well, we have again and again decided that it was far less trouble all around to keep it going. One good reason is, it is such expensive business to take out the address that is correctly set up in type, and then put it back again without making any mistake when the person renews as soon as he finds his journal stopped. Besides, we give everybody four plain and distinct notices before we send in his account to the collection agency. If you refuse to take the journal from the office, postmasters are expected to inform us of the fact. Unfortunately, however, very few of them do this. A great many bee-keepers move away without telling us of the fact, and let GLEANINGS

go to the old postoffice sometimes two or three years. A good many times somebody gets hold of them who values them enough to pay us—that is, after we get hold of the state of affairs. But what I wanted to speak of particularly is this fact: The collection agency seems to have a plan for *making* people talk; and, oh what pitiful letters we do get! I have had several this spring where it would almost make one shed tears to read them. The writer will often wind up by saying something like this:

"Now, I can not for a moment believe that my old friend A. I. Root, who writes the Home Papers, ever authorized any such proceedings as this."

Perhaps the writer tells of poor honey seasons, of floods or drouth; of sickness and death in the family; but he did not tell us a word about it until he and the dear wife, and perhaps the children also, were greatly pained and distressed by a harsh businesslike letter, because nobody had looked after GLEANINGS. A postal card, saying, "Please keep GLEANINGS going, if you can afford to; we have had sickness and lots of trouble; but we want GLEANINGS for the encouragement it gives; and if you can wait a while we will surely make it right," would make all clear. In such a case the subscription clerk notes the circumstances, often referring to myself, for I keep a careful oversight over the whole subscription list; and if misfortunes continue to come, so it is going to distress the poor friends, or so the party absolutely can *not* pay, we drop it without any hard feelings. Over and over again I have been obliged to say something like this: "Rest assured, dear friend, that The A. I. Root Co. never asks for a copper from any one for something he did not order and did not want." A great many times I leave the matter in this way: After we have got hold of the person, and succeeded in making him talk, I close the correspondence by saying: "And now, my good friend, if GLEANINGS has been worth something to you or to your family, during the past two or three years that it has been sent without orders, we leave it entirely to you to say how much that something is, or whether it is any thing at all."

A great many parties give as an excuse for *continuing* to neglect writing, that they felt ashamed to say any thing until they had some money, and hence did not say any thing. Now, please do not do that. If you can not do any better, tell one of the schoolchildren to write a card to Uncle Amos, telling him they want GLEANINGS kept going, and that they will pay after a while. I like to get letters and postal cards from the children. It indicates that they are helping papa and mamma. Why, I know lots of energetic go ahead bee-keepers who let the children do almost all the writing. They can just as well write business letters as to make pot-hooks in school that do not mean any thing. Perhaps some of the children will think it is a long time since Uncle Amos went to school. And, by the way, it pleases me to see how the children get the hang of the telephones. When Howard and Leland, one or both, had the grip, they used to

talk back and forth through the telephone, and they were learning to do business. Now, then, dear fathers and mothers, when you get your children to doing business with postal cards you are helping them a great lot in the way of a practical education, and you are helping the subscription clerk here at the Home of the Honey-bees a great lot also. By the way, let me say to you that, since Blue Eyes is married, her younger sister, Miss Carrie Belle Root, has taken charge of the list, and she is very *anxious* to have every one keep on taking GLEANINGS, if it is really proving helpful.

Just one thing more: You know we have been giving exceedingly liberal premiums during the past few months; in fact, I have almost been scolding the boys because they were so reckless in making offers to people who subscribe. Now, a good many of our old friends do not care for premiums. They just want GLEANINGS itself. Sometimes they have means so they would just as soon pay in advance as not; and this method saves all misunderstandings and unpleasant tangles. In order to assist this class of people we will send GLEANINGS two years for \$1.50; three years for \$2.00; five years for \$3.00. Sometimes several in the same neighborhood club together and take advantage of the above reduced rates. Now, dear friends, remember that Carrie and I have charge of the subscription-list; and on our part we are going to try hard and not let any selfishness creep in. We are going to try to let our readers know that we believe in my favorite little text, "Thou shalt love thy neighbor as thyself."



HOW TO SUPPORT A FAMILY ON A QUARTER OF AN ACRE OF GROUND.

Our readers will perhaps remember that this is the title of one department of our tomato-book. Of course, this quarter of an acre must be for gardening under glass. Well, when you first make your beds, fill them with rich soil and have the side boards all straight and plumb, sound wood, every thing will work nicely. But you will notice, after running this quarter-acre farm one or more winters, and especially after zero freezes, that the boards will be getting out of shape through the influence of frost and wet. If the ground is higher inside of the beds than the paths where you walk in, the freezing of the ground while the beds are not in use tends to spread the boards or plank that support the sashes. And, by the way, our beds were nearly all made of heavy inch hemlock boards. They ought to be $1\frac{1}{2}$, $1\frac{3}{4}$, or, better still, 2 inch plank; then when supported by the plan given on page 112 of the tomato-book they will be tolerably substantial. Notwithstanding, after the freezing and thawing during the winter the boards will

spread more or less. Our remedy so far has been to drive down oak stakes about 2 inches square, the stakes, of course, being driven in line by a cord stretched from one end of the bed to the other; then nail the board securely to said stakes, and saw them off low enough so they will not hold the sash up and let in the frost. But I do not like the stakes; first, because they rot off; then the next heavy frost is liable to pull them out and get things out of shape again.

This spring we are adopting another plan with our old and rickety beds. If your sash are 6 feet long, you want to cut up some strips of dressed pine, say 1x3 inches, just long enough to go across the bed, slipping down between the boards. With 6-foot sash these strips will need to be about 3 inches less than 6 feet in length. Now get out some more similar strips, only narrower and longer—say $1\frac{1}{4}$ inches wide by six feet long. Nail these narrow strips right in the center of the wider ones, projecting equally beyond each end of the wider ones. Now, if you lay this across the bed the narrow strip will catch on the top while the wide one goes down between the side boards. When the sash are in place they lie on top of the wide strip and come up against the narrow one, making a close joint to keep out frost. Now, this cross-piece, when pushed in place, will hold the side boards *apart* wherever they get too near together; but in order to bring them closer, if they get too far *apart* we need some pieces of heavy galvanized strap iron, bent in the shape of a letter L. The long part of the L is to be put between the two strips of wood before they are nailed together. To start with, two holes should be drilled in this long part for nails to go through and clinch. The short part of the L is to reach down over the outside of the side-boards to the bed. We have just had a lot of these cross-bars made, and painted red. We have them painted red so the boys can see them more readily when they want one. Now, in handling sash in any bed, whenever the sash do not reach, and threaten to drop down and mash the plants in the bed, just go for one of these bars. If you can not bring the sides of the bed up into place by hand, dig away the soil inside a little, and crowd up the refractory board with a crowbar; then crowd down your cross-bar, and put on your sashes. Whenever you are spading up a bed, the crossbar can be easily pulled off; and after the said bars have been kept in place until the ground is well settled and warm, the sides of the bed will probably stay till winter. Anybody who has been vexed and annoyed by having sashes drop down on the plants will readily appreciate this invention.

These crossbars serve another excellent purpose. Later in the season, when the frosts are not so severe, cotton cloth answers very well in place of glass. See description for the way it is used, in the first part of the tomato-book. By all means have your cotton cloth so it can be rolled up. Cotton cloth stretched on frames, I would not have around. The very fact that the wind blows them about so, is objection enough. Well, you can use the

cloth rolled up over the same beds where you use glass earlier in the season; but you have got to have rafters across the bed to keep the cloth from sagging down on the plants. These are all the more needed here in the North when you are liable to have quite a fall of snow on the cloth. If the cloth comes flat down on the plants it is but little better than nothing at all. Well, these crossbars I have described are just the thing to hold the cloth from sagging down when the weather is wet, or with the weight of snow on top. With these *movable* rafters you can have them 6, 9, or 12 feet apart according to circumstances. When the cloth is rolled up, if you find the rafters in the way they can be taken off in a second.

Another objection to the cloth covering here in the North is, if they are rolled up wet, or are allowed to become wet after they are rolled up, they are very quickly spoiled by rot. I am planning this season to have a suitable covering on the north side of each bed to protect the cloth from wet when it is rolled up. In this way it would last ever so much longer. With most plants there is no need of any cloth covering if the temperature is below freezing, or at any time when it is raining. Whenever it is raining I would rather have plants of almost every description uncovered than not; therefore if you could roll up your cloth covers, and have them in the dry just *before* every rain, it would save your cloth and benefit your plants. If the rain turns to snow I would still let all the hardy stuff remain until the snow commences to be *dry* snow; then roll down your cloth covering.

GROWING STRAWBERRIES IN THE SHADE.

Ever since my visit to Florida, where I saw such beautiful gardens in the shade of the palmetto-trees, I have been studying the matter of partial shade for plants during the intense heat of the summer in our northern localities. Some of the friends may remember that I paid \$2.50 for a leaflet containing wonderful secrets of value to farmers. One of the secrets was planting corn and potatoes in alternate rows so the corn would shade the potatoes during the intense heat of the summer. I have often thought I would give this matter a test, but have not yet got around to it. Since then I have had an opportunity of noticing, once or twice, that strawberries seemed to do better where shaded a part of the day than where they were exposed to the full blaze of the noonday sun. In the last *Practical Farmer*, in their symposium from strawberry-growers, I find the following, which you may be sure arrested my attention very strongly:

I have been growing strawberries for 30 years, and have tried various plans for overcoming difficulties, such as cost, winter-killing, frosts, and drought. I have succeeded in overcoming the first two, and, to quite an extent the remaining ones. I prefer land, in corn-stubble, plowed as early as possible in spring, and well prepared. Mark rows 4 feet apart by dragging a heavy chain on the land. Vigorous runners like Jessie and Crescent I give four feet in the row; Wilson's Albany and Parker Earle, 3 to 3½ feet. Plant a hill of corn between each strawberry-plant, and cultivate for corn and strawberries too. Strawberries thrive better in the shade of the corn than without it. The corn is gathered, and the stalks left

standing where they grew. With the first fall of snow you have your winter cover, and every wind adds to it. I have often had two feet of snow over my strawberry-beds, when 20 rods away the ground was bare. I do not disturb the stalks until after I harvest the fruit, as they help to modify the frosts during blossoming time, and in resisting evaporation during fruiting time. The crop of corn largely pays cost of production, and an acre of strawberries ready for the pickers should not cost over \$10. No damage from winter-killing, danger of frosts and drought diminished; and when the last fruit is gathered, summer-fallow the field, and it is ready for wheat in September. I am growing strawberries for profit and not for style or pleasure. Wilson's Albany, Jessie, Crescent, Harverland and Beder Wood are my favorites.

Ribble, Mich.

O. P. CHAPIN.

Now, friends, has any one of you tested either potatoes or strawberries shaded by alternate hills or alternate rows of corn? I am sure the cornstalks would be a most excellent protection, for winter, even if other mulching were used; and when the berries get ripe the cornstalks could be made to be of good service in keeping the fruit out of the mud and dirt. I do not know that I ever had any more satisfactory mulching for keeping the berries out of the dirt than dried-up cornstalks. The greatest objection was it was a good deal of work to place them around the plants.

HOW TO GROW THE LARGEST NUMBER OF PLANTS FROM A SINGLE STRAWBERRY-PLANT IN ONE SEASON.

M. Crawford, in his new catalog, devotes a page to the above. He says that, with proper arrangement, we may raise several hundred or may be a thousand. Of course, it will depend on the variety. If you want a fair description of all the new strawberries on the market, write to M. Crawford, Cuyahoga Falls, Ohio, for his new catalog. I suppose you know that friend C. has been for years authority on every thing pertaining to strawberries. There is one thing about his catalog that is refreshing. He does not praise every new plant he describes.

HEAVIER TESTIMONY STILL IN REGARD TO SWEET CLOVER AS A FORAGE PLANT.

Mr. Root:—I have been reading in GLEANINGS for and against sweet clover. Well, I have had a good deal of experience with it myself, and consider it a valuable plant as a forage for cattle and horses. If cut and allowed to wilt, cows eat it readily and thrive upon it, giving finely flavored milk and butter. Many acres of it are grown here around the shores of Utah Lake, upon land so heavily charged with mineral (alkali) that other crops will not grow at all, just for the purpose of reclaiming the land. After the clover crop, good crops of grain will grow. In addition to the value of the tops, the roots are also (I consider) more valuable, being one of the best root crops grown for cattle. Why, cows are just crazy for them. How I found this out was, I plowed up a five-acre piece of sweet-clover land in the fall of the year, seven years ago, after the crops had been gathered and the cattle turned into the fields. Imagine my surprise on seeing them all gather upon this piece of plowed land and eat those clover roots down. The cows almost doubled their flow of milk. This lasted for weeks until the land was tramped so solid that they could not get another root out of it, and the plowing, I think, didn't do much good. In addition to these values the plant is valuable as a fiber-producing plant. A number of years ago, at one of our county fairs I saw some fine towels made of the fiber of sweet clover. They looked much like linen, and were very strong. So much for sweet clover. I have no seed to sell.

Provo City, Utah, Feb. 17.

ELIAS JOHNSON.

Well, friend J., I am astonished too. Where sweet clover has grown very rank, I have no-

ticed the great fleshy roots; but it did not occur to me that they were of any value more than to furnish needed nutriment to the soil—going away down deep into the ground as they do, and pulling up the fertility. I can readily understand, however, that cows that have once acquired a taste for it would eat the fleshy strong-flavored roots. In fact, I have chewed pieces of the root just to see how strongly they were charged with the peculiar flavor that belongs to the flowers, tops, and seeds; and I confess I am astonished again to know that it has been used as a fiber plant. I knew its great value along the shores of Salt Lake. My impression is you have also dropped another valuable hint. In cutting sweet clover for feed it should be cut just before blossoming, and allowed only to wilt instead of getting dry. If it gets too dry the leaves drop off; but I think it can be cured without any trouble when it is only wilted, as you say. I believe much the same treatment is used to get the best quality of alfalfa hay.

THE NEW GIGANTIC GIBRALTAR ONION; MANUM GIVES HIS EXPERIENCE WITH THEM.

I tried them last year and I find them very large and sweet. They are the nicest onion to eat raw that I ever saw. I have passed them around among my neighbors, and all pronounce them very fine. One man said he could eat one of them as freely as an apple. I find they will keep well if braced up. I have some fine ones *now*; but if kept in boxes or barrels, even in potato-boxes, they will not keep well.

Bristol, Vt.

A. E. MANUM.

LESSONS TO BE GATHERED FROM THE ZERO WEATHER.

The first one is, that any one who wants proof that neither Hicks nor anybody else in the line of weather-prophets has any sort of glimpse of what the weather will be a whole year ahead, or even a month, can now have such proofs. The weather for the first half of February has given the almanac-makers a chance to immortalize themselves if they are honest. And, by the way, not a year passes that we do not have some marked divergence in weather, and something that is so widespread that a weather-prophet, if he had any glimpse at all into the future, would be sure to take cognizance of it. Will the good friends who insist that there are prophets who can tell the weather a year ahead, point us to the place where anybody has predicted this present blizzard? The thermometer may have been lower in some localities; but my impression is that no one living ever saw the mercury so low, for so many days in succession, and clear sunny days at that.

Another lesson is, have your cellars, houses, stock, and perishable crops fixed so as to be safe in spite of severe weather. I was more fortunate than I knew of when I fixed the steam-pipes so as to have them hot under the floors of our home. No water-pipes have been frozen or burst, and nothing has been injured, and I can say almost as much for our water-pipes here in the factory. But we have suffered some slight damage. For a good many years I have thought bee-keepers did not realize the importance of chaff hives of some sort; and I

still think that the chaff hive of my planning, as given in the A B C book, is about what is needed for such a winter as this. In our locality, about 20 below zero is the coldest recorded, by accurate thermometers. We are told by the papers that even in the neighboring State of Michigan, in the northern part, they have a record of 50 below zero. Very likely many bee-keepers will suffer.

Our Roll of Honor.

I want to join the "Roll of Honor," as we began to take GLEANINGS in 1879, and have almost all the numbers since then. I lent some out which were never returned. We have quite a pile of "Juvenile" GLEANINGS; also have A. I. Root's picture with Blue Eyes. I do not think I can ever give up GLEANINGS. Our Homes has been a great help to me, and I do enjoy reading the whole of it. I should like to clasp the hands of all the A. I. Root family, but more especially those of A. I. Root.

MRS. A. C. HARTWELL.

Challacombe, Ill., Jan. 11.

I have taken GLEANINGS since 1876, and I have them all yet. Part of them are bound, but the most of them are simply tied in four places with stout strings after they are arranged in regular order, so I can refer to any year's journal in the past 23 years that I see fit to. I have been thinking you may get yourselves into more of a job than you bargained for by offering the Journal to old standby subscribers. We all enjoy the Home Papers first rate, and have been very much encouraged in our religious warfare. For my own part I guess I should have given up the bee business long ago if it had not been for GLEANINGS.

Bedford, Iowa, Jan. 11.

JAS. S. WILLARD.

I wish to be numbered among the stay-by friends of GLEANINGS, having been a subscriber about 21 years, as nearly as I can remember. Through a mistake of the postmaster, several copies addressed to Frank Sage, Colebrook, Conn., fell into my hands. I was a boy then, but I remember very distinctly the struggle I had with my conscience as to whether it was right for me to keep those few numbers or not; but, thanks to the influence of the Home Papers, right prevailed, and I returned them. I sent on my subscription, bought up the back numbers, and, as the Sunday-school books say, have been happy ever since. I have Vol. I. to V. bound in one book, besides several other volumes neatly bound. We hold all Rootville in the highest esteem, and hope that Uncle Amos and his faithful wife may be spared to us a good many years yet.

BURTON L. SAGE.

New Haven, Conn., Jan. 11.

I am tied up in the house with the grip, or I should have written before this time. My bee-keeping commenced in the fifties, with Quinby's box hive; then some time in the sixties I read Langstroth, and subscribed for the *American Bee Journal*, published by Sam'l Wagner, Washington, D. C. I have copies of the *A. B. J.* of about this time, with articles from Novice, which were read with very great interest, as I was then practicing with the frame hive, swarming artificially, and rearing my first Italian queens. I was interested in every thing that could give me any light on the subject. In the early seventies, my health failing, it was deemed best for me to go away from bees a few years; so in 1873 I came to Denver and missed the first volumes of GLEANINGS, but I suppose my partner had them in Illinois. In looking over my pile of volumes I find the oldest is for 1876. The Home Papers I have from the first; and I must bear testimony to their great helpfulness to me these many years. I have also been very much interested in your health talks, travels, etc. Your true friend and brother in the Lord,

J. L. PEABODY.

Denver, Colo., Jan. 10.

I hope you will excuse me for presenting my name as one of the veterans in taking GLEANINGS, so late in the day; but, nevertheless, I want you to know that I am one of them if no more. I commenced with the second volume, and I have all up to the present, filed away. I learned many a lesson from GLEANINGS, and I love to go away back in mind to those early days and ponder over and live over those happy

days. I have met you but once, and that was at the convention of the North American Bee-keepers' Society at Indianapolis, in 1886. I then lived in Indiana. Probably you remember my exhibit of honey at that meeting. You saw some work done by the bees, with my help, that you likely never saw before, and none since. That was letters formed in penmanship, my address in full, and a skeleton of a queen. This was a part of a display of honey that I exhibited at our State fair a few days previously. One other thing I wish to mention: I exhibited some of those plain sections of honey at that fair you have been talking about of late, and I have some of those fence separators to-day that I made then, as nearly like those you are using now as can be from pictures in GLEANINGS, and those plain sections gave me a good display every time. So much for plain sections away back in early days.

I now live in Indiana. I helped organize the State Bee-keepers' Society at Indianapolis and was the first to introduce the socials or picnics in Indiana in which meetings I enjoyed many a happy hour. I still take GLEANINGS, and always expect to as long as I live and it is published.

A. Cox.
Summertown, Tenn., Jan. 14.

I received your present. Accept thanks. I showed it to the children, and they are busy comparing it with the real cells. They read GLEANINGS and are well acquainted with "Uncle Amos." In fact, our oldest son is named Amos. He is 19 years old, and wanted to go and fight the Spaniards.

We are in the foot-hills of the Coast Range of mountains, about forty miles from the coast; nearest railroad station is nine miles. The honey flora here is the aflaria, vine maple, mountain sage. The aflaria will grow all winter, and bloom when the sun shines. The vine maple blooms just after fruit-bloom, and the mountain sage blooms in June. The country here is very different from the East, there being two seasons—the wet and dry. It seldom freezes, and stock of all kind does fairly well all winter. Bees generally winter well, and fly almost every day, and carry pollen all winter. We have all had the grip, and know how to sympathize with you. There is a mineral spring close to us, the water of which is good for grip; in fact, I believe the water will cure many stomach troubles.

JESSE W. THORNTON.

Oak Creek, Ore., Feb. 14.

I have taken GLEANINGS since the fall of 1883. You sent it to me gratis one year in consideration of my having been sick so long. That drew me very close to you, for I had learned to love you through your Home Papers. Our Homes turned my thoughts in the right way. They taught me of Jesus. I sought him and found him, *bless his name*. I have always wanted to tell you, but didn't quite know how. Please excuse my blundering, and remember that I expect to take GLEANINGS as long as I am able to read it, and I feel it will continue to prosper. May God bless you for the good work you are doing.

C. W. VANHOUTEN.

Cuba, Ill., Jan. 11.

In response to your call for those who have taken your paper for 25 years or more, I stand up and speak. I am not sure that I have any right to arise, as I have not any record at hand to refer to. I think I commenced taking GLEANINGS some time in the second year you published it. I first saw a copy at my old friend's, Moses Quinby. I subscribed for it at once, also sent for the back numbers. I have every issue of GLEANINGS that ever was printed, and I prize them, as they contain a vast amount of useful information. If I am not old enough to be in your class, please omit me and there will be no harm done.

Randallville, N. Y., Jan. 21.

E. D. CLARK.

I wish not to claim to belong to the Roll of Honor; but as I became interested in bees in the 70's I subscribed for GLEANINGS in 1878. Bee-keeping is a side issue with me, and very largely recreative. My yield last season was 60 lbs. of comb honey per colony. I greatly admire the principles set forth in GLEANINGS, of thrift, morality, and Christianity, and trust that you may be spared many years yet to your sphere of usefulness.

F. P. NASH.

710 O St., Washington, D. C., Feb. 20.

Friend Root:—After reading the letters from old-timers I examined my stack of GLEANINGS, which is over 3 ft. high, and found volume III., 1875. I have been a subscriber ever since, and expect to be as long as I live.

R. B. PARKER.

La Fayette, Ind., Jan. 17.

I have taken GLEANINGS ever since it was first published; and if I am not too late I will accept the "little present." I can not remember how many years since the first number came out.

G. W. DEAN.

Boneta, O., Jan. 13.

I have been a subscriber since 1876. I then lived in Lapeer, Mich. I farm and operate a cotton-gin in connection with bees; but I prefer working with the latter. While bees fail some years to return any income, I believe that, after my 16 years in Texas, they can be depended on as well as or better than any other rural industry.

WM. WRIGLESWORTH.

Ocece, Tex., Jan. 5.

RIDING ON SUNDAY FOR PLEASURE.

Friend Root:—I want to enter a protest against your article, "Notes of Travel," for Jan. 1, especially at this time when the tendency is to break down the Christian Sabbath—*vea*, the American Sabbath—and make it a holiday. Earnest men and women all over the country are working, writing, and praying to stop this very evil that you are laughing about and print in a public journal. I refer to wheel-riding on Sunday, for pleasure, and yourself a preacher of righteousness!

Years ago temperance (?) men would take a trip back into the woods, and there indulge in the "good crather." O consistency! thou art a jewel. But I never knew them to come home and tell about it. Dear Bro. Root, for the sake of our young people, and for the sake of our Lord's day, frown down every thing that is merely "worldly pleasure." If I have written too strongly, pardon me, for I felt that I must speak out. Your temperance talk in the same issue did me lots of good.

G. S. STANCLIFF.

Chasm Falls, N. Y., Jan. 6.

Dear brother, we so nearly agree in this matter, that, if you will not come over and stand on my side, I don't know but I shall have to confess I did wrong, and go over and stand on *your* side. I should have added, at the time I wrote that, were it not for the amount of space it was going to take, that I never ride my wheel on Sunday for pleasure, neither does Bro. Kratz, I am sure. I use it to go to meeting, and to go out in the country when asked to speak or help in a Sunday-school, but never for recreation. In the case you allude to, Bro. Kratz uses his wheel a great deal to make his appointments to preach. He had never seen a chainless wheel, but had heard much about them. All the riding he did that Sunday morning occupied only a few minutes, and there was nobody present to take it as an example. Perhaps I did wrong to mention the matter at all. In attendance at that Sunday meeting there were quite a lot of youngsters. After the meeting was over I saw that they were quite curious about that wheel that had no chain. Now, was it my duty to look sober and solemn because it was Sunday, and refrain from looking at or speaking of the wheel? I can not think it was. I showed it to the boys, got to talking with them about it, and answered their questions and let them see that I was not only flesh and blood like themselves, but that I had boyish ideas and sympathies, even if I was gray-headed. I did not get on to it, nor ask the boys to get on; but I did use it as a means of getting acquainted, and letting the boys know that I loved them, and felt anxious about them, and sympathized with them in their sports and pleasures. We might not all draw the line in the same place, but I do think we may err in both directions. May the Holy Spirit guide and direct us!